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DOMESTIC FOWLS

BINGLEY'S

NATURAL HISTORY;

EXHIBITING, IN A SERIES OF DELIGHTFUL ANECDOTES AND DESCRIPTIONS, THE CHARACTERISTIC HABITS AND MODES OF LIFE OF THE VARIOUS

Beasts, Birds, Fishes, Insects, Reptiles, Mollusca, and Animalculæ of the Globe.

BY REV. W. BINGLEY, A. M.

WITH LARGE ADDITIONS FROM CUVIER, BUFFON, WOOD, DALLAS, WILSON, AUDUBON, BONAPARTE, NUTTALL, AGASSIZ, JARDINE, BREWER, AND MANY OTHERS.

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CONTENTS.

ON THE STUDY OF NATURE 11

THE STRUCTURE AND FUNCTION OF ANIMALS IN GENERAL 16

MAMMIFEROUS ANIMALS 31

- CLIRES 266–315
- PECORA 316–400
- BELLUÆ 401–434
- CETACEOUS ANIMALS 435–450

BIRDS 451

- PIES 495–553
- PASSERINE BIRDS 554–656
- GALLINACEOUS BIRDS 657–709
- WADERS 710–758
- SWIMMERS 759–810

AMPHIBIOUS ANIMALS 811

- REPTILES 811–844
- SERPENTS 845–859

FISHES 860

- APODAL FISH 860–867
- JUGULAR FISH 868–870
- THORACIC " 871–882
- ABDOMINAL " 883–903
- CHONDROPTERYGEOUS FISH 904–918

INSECTS 919

- COLEOPTEROUS INSECTS 919–938
- HEMIPTEROUS " 939–949
- LEPIDOPTEROUS " 950–958
- NEUROPTEROUS " 959–961
- HYMENOPTEROUS " 962–976
- DIPTEROUS " 977–981
- APTEROUS " 982–1001

WORMS 1002

- INTESTINAL WORMS 1002–1007
- MOLLUSCOUS WORMS 1008–1015

SHELL FISH 1016

- TESTACEOUS WORMS 1016–1018
- BIVALVES 1019–1026
- UNIVALVES 1027–1032
- ZOOPHITES 1033–1037

ANIMALCULES 1038

028

Adder 854
Adjutant 721
Agouti 268
Albatross 791
Alligator 833
Alpaca 328
Amazon Ant 961
Amphisbœna 859
Amphitrites Worms 1009
Anaconda 852
Anchovy 898
Anemones 1009
Angler 915
Ant-Eater 85, 961
Antelopes 356
——— Scythian 360
Ants 975, 982
Apes 31
—— Barbary 43
—— Pigmy 44
Aphides 947
Aphysia Worms 1009
Apteryx 707
Argali 379
Argonauts 1027
Armadillo 88
——— Six banded 89
——— Peciciago 90
Arnee 387
Ascarides 1002
Ass 410
Auks 782
Avocet 748
Axis 347

Baboons 46
Babyroussa 431
Badger 245
Barbel 916
Bats 73
Bear 226
Beaver 271
Bed-Bug 946
Bees 969
Beetles 919, 934, 935
Bernacles 1016
Bird of Paradise 530
Bison 389
Bittern 723
Black-bird 564
Black-cap 562
Blauwbuck 368
Blennies 917
Blesbock 369
Blue-bird 610
Boa 847
Boat-bill 720
Bobac 290
Bob-o-link 566
Booby 799
Borers 926
Buffalo 395

Bugs 946
Bullfinch 578
Bunting 580
Bustards 695
Butterfly 951
Buzzard 475

Cachalot 444
Cadew-fly 960
Camel 317
Canary-finch 586
Capromys 291
Capybara, or Chiguira 269
Caracal 208
Cariama 709
Carp 899
Carrion Crow 515
Cassowary 705
Cat-bird 609
Cats 173–205
Cavy 270
Cedar, or Cherry-bird 622
Centipedes 1000
Cerambyx, or Capricorn 932
Cerastes Snake 858
Cereopsis 765
Chætodon 875
Chaffinch 607
Chaja 714
Chameleon 838
Chamois 356
Chatterer 624
Cheese-mite 986
Chick-a-dee 621
Chickens 668–681
Chigœ 985
Chimpanzee 33
Chinchilla 314
Chub 900
Chuck-well's-widow 493
Civet 213
Coati-mondi 247
Cochineal 948
Coccinella 930
Cock, domestic 668
Cockatoos 507
Cock-chafer 920
Cockle 1020
Cock-roach 939
Codfish 868
Condor 452
Coot 755
Coral 1034
Corallines 1036
Corvorant 800
Cowrie 1028
Crab 993
Crane 710–722
Crane-fly 977
Craw-fish 1000
Creeper 548
Cricket 941

Crocodile..... 829
Cross-bill..... 572
Crow-Blackbird..... 568
Crows..... 512, 524, 525, 526
Cuckoo..... 534
Curculio..... 931
Curlew..... 725
Cuttle-fish.....1011

Dabchick..... 756
Dace..... 901
Darter..... 802
Dasyurus..... 255
Day-fly..... 959
Deer.....330–348
Dermestes..... 926
Devil-fish..... 918
Divers..... 804
Dodo..... 708
Dogs.....133–153
Dog-fish..... 911
Dolphin..... 446
Dormouse..... 302
Doree..... 872
Dotterel..... 738
Dragon-fly..... 959
Dragon, flying..... 838
Ducks.....759–769
Dunlin..... 734

Eagle.....463–475
Earth-worm.....1005
Earwig..... 937
Echidna..... 256
Eel..... 860
Eft, or Newt..... 843
Eider Duck..... 766
Eland..... 363
Elephant..... 100
Elk..... 331
Emu..... 706
Ermine..... 222
Esculent Swallow..... 632

Falcon.....460–483
Ferret..... 218
Fieldfare..... 563
Finch..... 582
Flamingo..... 745
Flatfish..... 873
Flea..... 984
Flounder..... 875
Fluke-worms.....1003
Fly..... 978
Flying-fish..... 890
Fly-catcher..... 590
Fowls..... 668
Fox..... 167
Frogs..... 818
Fury-worms.....1004

Gad-fly..... 977
Gadwall or Grey..... 772
Gall-insect..... 962
Gallinule..... 745
Gannet..... 797
Garganey..... 771
Gazelle..... 366
———, Dorcas..... 369
Genet..... 222
Gentil Falcon..... 477
Giraffe..... 348
Glow-worm..... 932
Glutton..... 239
Gnat..... 980
Gnoo..... 361
Goat..... 370
——, Syrian..... 374
Goat-sucker..... 492
Godwit..... 727
Goldfinch..... 585
Goldfish..... 902
Goosander..... 768
Goose..... 761
Goshawk..... 478
Grampus..... 450
Grayling..... 887
Grebe, or Gaunt..... 755
Greenfinch..... 573
Grouse..... 683
Grosbeaks..... 572, 574
Guana..... 835
Guanaco..... 327
Gudgeon..... 900
Guinea Fowl..... 681
——— Pig..... 270
Guillemot..... 790
Gulls..... 805
Gurnard..... 882
Gymnotus..... 862
Gyr-Falcon..... 481

Haddock..... 869
Hair-worm.....1004
Hake-fish..... 870
Hare..... 306
——, Alpine..... 311
——, Calling..... 313
——, Ogotona..... 313
Hartebeest..... 367
Hawk.....480, 481
Hawkmoth..... 953
Hedge Accentor, or Sparrow.. 608
Hedgehog..... 263
Hen Harrier..... 478
Heron.....710, 714
Herring..... 892
Hippopotamus..... 419
Hog..... 425
——, Ethiopian..... 429
Holibut..... 873
Hoopoe..... 635
Hornbill..... 510
Hornet..... 965

Horse..... 401
Humming Bird..... 550
Hyena..... 159
Hyran..... 424

Ibex..... 371
Ibis..... 747
Ichneumon..... 209
———— Fly..... 963

Jacana..... 750
Jackal..... 165
Jackdaw..... 520
Jager, Richardson's..... 807
Jaguar..... 198
Jay..... 521
Jerboa..... 303

Kangaroo..... 250
King-bird..... 589
Kingfisher..... 545
Kinglet, Fiery Crowned..... 609
Kinkajou..... 247
Kite..... 477
Klein-buck..... 369
Koodoo..... 362

Lady-bug..... 930
Lagotis..... 315
Lamprey..... 914
Lantern-fly..... 944
Lark.....555, 594
Lasher..... 917
Leeches.....1006
Lemming-rat..... 283
Lemurs..... 68
Leopard..... 192
Ling..... 870
Linnet..... 582
Lion..... 173
Lizard..... 828, 836
Llama..... 325
Loach..... 916
Lobster..... 997
Locust..... 940, 945
Locust-eating Thrush..... 571
Long-worm.....1005
Loon..... 804
Louse..... 983
Lucanus..... 924
Lumpsucker..... 918
Lynx..... 206
Lyre-bird..... 639
Lytta..... 936

Macaw.....498, 505
Mackerel..... 878
Madrepores..... 1033
Magpie..... 523
Manis..... 87
Mantis..... 939
Marmot.....288, 292
Martin.....214, 628–633
May-fly..... 958
Megapode..... 663
Merganser, hooded..... 809
Missel, or Misseltoe Thrush... 561
Mocking-Bird..... 569
Moles..... 257
Monkeys.....51–65
Monk-fish..... 910
Moose-deer..... 331
Moose, or Monati..... 117
Moths..... 954
Mouse..... 280
Mule..... 415
Mullet..... 888
Muscle.....1023
Musk..... 328
Musk Ox..... 398
Muskrat..... 277
Musquito..... 981
Mya tribe.....1019

Napu Chevrotain..... 330
Narwal..... 435
Nautilus.....1027
Nereis.....1009
Nightingale..... 599
Nut-hatch..... 544
Nyl ghau..... 358

Ocelot..... 208
Opossum..... 248
Oran Otan..... 33
Oriole..... 527
Ornithorhyncus..... 91
Oryx..... 363
Ostrich..... 700
Otter..... 222
Ounce..... 192
Ouzel, water..... 556
Owls.....484–492
Ox..... 382
Ox-bird, or Dunlin..... 734
Oyster.....1025

Paca..... 269
Pallah..... 367
Panther..... 191
Papuan Podargus..... 494
Paradise Grakle..... 639
Parrots..... 498–506
Partridge..... 690
Peacock..... 661
Peccary..... 431
Pelicans.....792, 802
Penguins..... 787
Perch..... 877
Peregrine Falcon..... 482
Peristera..... 650
Petrel..... 788
Phalanger..... 257
Phalarope..... 757

Phasianella..... 652
Pheasant..... 664
Pholas.....1017
Pigeons..... 645
Pike..... 887
Pill-chafer..... 923
Pilchard..... 895
Pintado Tribe..... 681
Pipe-fish..... 915
Pipit, meadow..... 597
Plaise..... 875
Plant-lice..... 947
Plovers.....738, 740
Polecat..... 217
Polype.....1036
Porcupine..... 266
———— sea..... 918
Porpoise..... 448
Prawn..... 998
Proteus..... 844
Ptarmigan..... 689
Ptinus..... 926
Puma..... 196
Purre..... 727
Python, tiger..... 853

Qua-bird.....717
Quagga.....418
Quail.....693

Rabbit..... 309
Raccoon..... 243
Rail..... 742
Rapacious birds..... 451
Rat..... 276
Ratel..... 211
Rattlesnake..... 845
Raven..... 513
Ray..... 912
Razor-shell.....1019
Red-billed Pique-bœuf..... 639
Red-breast..... 604
Redstart.....558, 562
———— American..... 591
Reed bird..... 567
Reindeer..... 335
Reit-Buck..... 368
Remora..... 871
Rhinoceros..... 92
Rice-bird..... 566
Ring-dove..... 643
Roach..... 901
Robin..... 605
Rock-dove..... 654
Roe..... 344
Rook..... 517
Rose-chafer..... 922
Ruff, or reeve..... 732

Sable..... 216
Salamander..... 841
Salmon.....883
Saw-fly..... 962
Sandpiper..... 732
————, Wilson's..... 735
Sand-wasp..... 964
Sarraybe..... 367
Scallop.....1021
Scarabœus..... 919
Scorpion..... 992
Sea-horse..... 915
Seals..... 123
Sea-urchin.....1015
Sea-wing.....1026
Shad..... 898
Shark..... 905
Sheep..... 375
Shetland pony..... 410
Ship-worm.....1017
Shootwing, mountain..... 563
Shrew-mouse..... 262
———water,..... 262
Shrike, great or cinereous..... 495
———, tyrant..... 497
Shrimp,..... 998
Silkworm..... 955
Silurus,..... 917
Siskin..... 608
Skate..... 913
Skimmer..... 809
Skippers..... 934
Skunk..... 210
Sloth..... 82
Slugs.....1008
Smelt..... 886
Snails.....1029
Snakes..... 854
Snipe.....725, 729
Sooty Tapoa..... 256
Spanish-fly..... 936
Sparrow..... 583
Sparrow-hawk..... 480
Spermaceti whale..... 444
Spheges..... 964
Spiders..... 987
Spider-fly..... 981
Sponge.....1035
Spoonbill..... 750
Sprat..... 897
Springbok..... 365
Squirrels..... 293
Stag-beetle..... 924
Star-fish.....1013
Starling..... 554
Stilt..... 739
Stoat..... 222
Stork..... 712
Sturgeon..... 904
Sucking-fish..... 871, 917
Surmullets..... 881
Swallows..... 624
Swan..... 759
Sword-fish..... 864
Sylphæ..... 928

Tailor-bird 616
Talpicott 649
Tape-worm 1003
Tapir 422
Tatler 751
Teal 775
Tench 900
Teredo 1017
Termes 982
Tern 808
Thornback 913
Thread-worms 1004
Thrush 560
Thunny fish 880
Tick 986
Tiger 185
Titmice 617–621
Toad 826
Torpedo 912
Tortoises 811
Toucan 507
Trogon 635
Trout 885
Trumpeter 698
Turbot 873
Turkey 657, 662
Turnstone 733
Turtles 815

Umber 887
Urchins 263

Vibrio tribe, ... 1040
Vicuna 325
Vinago 656
Viper 854
Vireo, red-eyed 593
Volvox 1041
Vorticella 1038
Vultures, ... 451, 455

Wagtail 602
Walrus 117
Wapiti 345
Warbler, garden 559
Warblers, ... 599, 601, 611
Wasp 965, 966
Waxwing, or chatterer 623
Weasel 208, 219
Weevil 931
Whale 437
Whame-fly 979
Wheat-ear 558, 603
Whidah 580
Whip-poor-will 493
Whiting 869
Widgeon 773
Wolf 155
Wolf-fish 862
Wolverine 241
Wombat 255
Woodcock 728
Wood-pecker 541
Wren, ... 606, 612, 616
Wryneck 543

Yak 398
Yapak 257
Yellow-hammer 580

Zebu 399
Zebra 416

ON THE STUDY OF NATURE.

"Once upon a time, when the Seven Wise Men of Greece were met together at Athens, it was proposed that each of them should state to the others what he considered to be the greatest wonder in the Creation. One of them asserted that nothing was so wonderful as the heavenly bodies. He explained the opinions of some of the astronomers respecting the fixed stars, that they were so many suns, each having planets rolling round them, which were stocked with plants and animals like this earth. Fired with the idea, they instantly agreed to supplicate Jupiter that he would at least permit them to take a journey to the Moon, and remain there three days, in order that they might view the wonders of that place, and give an account of them to the world at their return. Jupiter consented: he directed them to assemble on a high mountain, where a cloud should be in readiness to convey them thither. They did so, and took with them some men of talents, to assist in describing and painting the objects they should discover. At length they arrived at the Moon, where they found a palace fitted up for their reception. On the day after their arrival, they were so much fatigued with their journey, that they remained in the house till noon; and, continuing still faint, they partook of a delicious entertainment, which they relished so much that it quite overcame their curiosity. This day they only saw, through the windows, a delightful country, adorned with luxuriant verdure, and with flowers exquisitely beautiful, and heard the melodious singing of the birds. The second day they rose very early, to commence their observations; but some elegant females of the country, calling upon them, advised that they should first recruit their strength before they exposed themselves to the laborious task they were about to undertake. The sumptuous banquet, the rich wines, and the beauty of these females, prevailed over the resolution of the strangers. Music was introduced, the young ones began to dance, and all was turned to jollity; so that the whole of this day seemed dedicated to gaiety and mirth, till some of the neighbors, envious of their happiness, rushed into the room with swords. With some difficulty these were secured; and it was promised, as a recompense to the younger part of the company, that, on the following morning, they should be brought to justice. On the third day the trial was heard; and, in consequence of the time occupied by the accusations, pleading, exceptions, and the judgment itself, the whole day was occupied, and the term which Jupiter had allowed to the Wise Men expired. When they returned to Greece, the whole country flocked around them to hear the wonders of the Moon described; but all they could say, for it was all they knew, was this: that the ground was covered with verdure, intermixed with flowers; and that the birds sang delightfully among the trees: but what was the nature of the flowers they had seen, of the birds they had heard, or of the country they had visited, they were entirely ignorant. On which they were every where treated with contempt."*

This fable was applied, by Linnæus, to mankind in general. In youth we are too feeble to examine the great objects around us; all that season, therefore, is lost amidst weakness, indolence, luxury, and amusement. We are little better in manhood; settling ourselves in life; marrying; bustling through the world; overwhelmed, at length, with business, cares, and perplexities, we suffer those years also to glide away. Old age succeeds: still some employments intervene, till, at last, we

* In the Lectures of Linnæus on Natural History, he frequently made use of some apt similitude by way of exciting the attention of his audience. The preceding fable was one that he adopted in his Lecture on Insects.

have passed through the world, without scarcely a single recurrence to the admirable works of our Creator; and, in too many instances, even without having duly considered the end for which we were brought into it. This, with a few exceptions, is the progress of man through life. It is true that no one is able to avoid being led, by his own feelings, occasionally to notice the wonderful productions with which he is surrounded. All can remark the beautiful verdure of the fields and woods; the elegance of the flowers; and the melodious singing of the birds; yet few indeed give themselves the trouble of proceeding a single step further, or exhibit any desire of examining into the nature of these astonishing combinations of Divine Power.

It is one material use of the study of Nature, to illustrate this most important of all truths: "That there must be a God: that he must be Almighty, omniscient, and infinite in goodness; and that, although he dwells in a light inaccessible to any mortal eye, yet our faculties see and distinguish him clearly in his works."

In these we are compelled to observe a greatness far beyond our capacities to understand: we see an exact adaptation of parts composing one stupendous whole; a uniform perfection and goodness, that are not only entitled to our admiration, but that command from us the tribute of reverence, gratitude, and love to the Parent of the Universe. Every step we take in our observations on Nature, affords us indubitable proofs of his superintendence. From these we learn the vanity of all our boasted wisdom, and are taught that useful lesson, humility. We are compelled to acknowledge our dependence on God, and that, deprived of his support, we must instantly dissolve into nothing.

Every object in the Creation is stamped with the characters of the infinite perfection and overflowing benevolence of its Author. If we examine, with the most accurate discrimination, the construction of bodies, and remark even their most minute parts, we see clearly a necessary dependence that each has upon the other; and, if we attend to the vast concurrence of causes that join in producing the several operations of Nature, we shall be induced to believe further, that the whole world is one connected train of causes and effects, in which all the parts, either nearly or remotely, have a necessary dependence on each other. We shall find nothing insulated, nothing dependent only on itself. Each part lends a certain support to the others, and takes in return its share of aid from them. Let us, for instance, refer to the *eye*, an organ which is common to nearly all animal bodies. Here we have exhibited to us nicety of formation, connections, and uses, that astonish us. We see it placed in a bony orbit, lined with fat, as an easy socket in which it rests, and in which all its motions readily take place. We know it to be furnished, among many others, with those wonderful contrivances, the iris, the pupil, and different humors; and with that incomprehensible mechanism the optic nerve, which affords to the brain, in a manner greatly beyond our conceptions, the images of external objects. How admirable is the construction of the *skeleton!* every particular bone adapted peculiarly to the mode of life and habits of the animal possessing it. The *muscular system* is still more entitled to our wonder; and if we enter into examination of the viscera, the skin, and other parts of the body, we can fix no bounds to our astonishment.

But all the common operations of Nature, surprising as they are, become so familiar to us, that in a great measure they cease to attract our notice. Thus also all the usual powers of animal life, which, were they but adverted to, could not fail to affect the mind with the most awful impressions, are suffered to operate unheeded, as if unseen.—We all know, for example, that, whenever inclination prompts to it, we can, by a very slight exertion of our vital faculties, raise our hand to our head. Nothing seems more simple or more easy, than this action; yet, when we attempt to form an idea of the way in which that incorporeal existence which we call *mind*, can operate upon matter, and thus put it in motion, we are perfectly lost in the incomprehensible immensity that surrounds us. When we try to investigate the properties of matter, we perceive that, by patience and attention, we can make a progress in attainments to which, according to our limited ideas, bounds can scarcely be assigned. The motions of the planets can be ascertained, their distances measured, and their periods assigned. The Mathematician is able to demonstrate, with the most decisive certainty, that no Fly can alight upon this globe which we inhabit without communicating motion to it; and he can ascertain, if he choose to do it, what must be the exact amount of the motion thus produced. In this train of investigation the mind of a Newton can display its superior powers, and soar to a

height that exalts it far above the reach of others; and yet, in trying to explain the cause of animal motion, the meanest reptile that crawls upon the ground, humiliating as the thought may be, is on a footing of perfect equality with a Newton: they can alike exert the powers conferred on them by the Almighty Creator, without being able to form the smallest idea of the way in which they are enabled to produce these effects. Man, however, can contemplate these effects if he will; and Man, perhaps alone of all the animal sthat exist on this globe, is permitted, by contemplating the wonders which these unfold, to form, if he please, some idea of his own nothingness, with a view to moderate his pride, and thus to exalt himself above the unconscious agents that surround him.

When the Anatomist considers how many muscles must be put in motion before any animal exertion can be effected; when he views them one by one, and tries to ascertain the precise degree to which each individual muscle must be constricted or relaxed, before the particular motion which is indicated can be effected, he finds himself lost in the labyrinth of calculations in which this involves him. When he further reflects that it is not his own body only that is endowed with the faculty of calling forth these incomprehensible energies, but that the most insignificant insect is vested with similar powers, he is still more confounded. A skillful naturalist has been able to ascertain that, in the body of the minutest Caterpillar, there are upwards of *two thousand* muscles, all of which can be brought into action with as much facility, at the will of that insect, and perform their several offices with as much accuracy, promptitude, and precision, as the most perfect animal; and that all this is done by the caterpillar, with equal consciousness of the manner how, as the similar voluntary actions of Man himself are effected! It would be no easy matter to make some men believe that the most minute insect, whose whole life may be calculated for the duration of only a few hours, is, in all its parts, as complete as the Elephant that treads the forests of India for a century. Little do some persons imagine that even in its appearance, under the greatest magnifying powers, it is as elegant in every respect, and as beautifully finished, as any of the larger animals! Unlike the productions of men, all the minute parts of the works of God appear in greater perfection, and excite in us greater admiration, the more minutely and more accurately they are examined. M. de Lisle saw, with a microscope, a very small insect, that in one second of time advanced three inches, taking *five hundred and forty* steps; and many of the discoveries of Leuwenhoek were even still more wonderful than this.

If, from the contemplation of microscopic objects, we turn our attention to the *system of the Universe*, and view the Heavens, what an astonishing field of admiration is here afforded us! The immense globe that we inhabit is but a speck in the Solar system; and that system, stupendous as it is, is lost in the immensity of the space around. Our Sun becomes a star to Planets revolving round other Suns, as their Suns become Stars to us. Of these no fewer than *seventy-five millions* may be discovered in the expanse exposed to our investigation. But what are even all these, when compared with the multitudes distributed through the boundless space of air! The Universe must contain such numbers as exceed the utmost stretch of human imagination. To obtain some faint conception of the wonderful extent of space, we may remark that stars of the first magnitude, or such as seem to us the largest, are nearly 19,000,000,000,000 miles from our Sun; and that some of the smallest stars are at many times that distance! "Great is our God, and great is his power! O God, who is like unto thee!"

But to return to the Animal Creation; we find there innumerable additional proofs of our hypothesis. We see that all the smaller creatures, which serve us for food, are particularly fruitful, and that they increase in a much greater proportion than others. Of the birds it is extremely remarkable, that, lest they should fall short of a certain number of eggs, they are endowed with the power of laying others in the place of those that are taken away; but that, when their number is complete, they invariably stop. Here is an operation, like many others which we shall have to observe, much beyond the reach of our faculties to comprehend. How the mere privation of part should cause a fresh production, is not indeed easy to understand. The organization of an offspring should, in this case, almost seem a voluntary act of the female; but, in what manner it is done, we are not only ignorant at present, but shall most probably ever remain so. *Noxious animals* in general multiply slowly; and whenever we find an unusual increase of such, we generally discover that some-

thing has been given by Providence for the purpose of destroying and counterbalancing them. Many species devour each other; and multitudes which might otherwise, by their numbers, become of serious injury to mankind, afford food to other creatures. The insect tribes increase with astonishing rapidity. The issue of some of them amount to more than two thousand in a year; and, were these not destroyed by innumerable enemies, they would soon fill the air, and in the end would occasion the destruction of the whole animal and vegetable creation.

The *offspring* of every animal, with regard to number, bears a certain proportion to the duration of its life. The Elephant lives to the age of a hundred years or upwards; the female consequently produces but a single young one at a birth, and this does not arrive at maturity till it is sixteen or eighteen years old. Nearly the same may be remarked of the Rhinoceros, and of all the larger animals: but in most of the smaller ones, whose lives are short, or whose increase is not so injurious to man as the increase of these would be, we always find the number of offspring to be much greater. No species has ever been found to increase so much as to annihilate the others; and this singular harmony and just proportion has now been supported for several thousand years. "One generation passeth away, and another succeedeth," but all so equally as to balance the stock in all ages and in all countries.

In the *Vegetable Creation* we observe the same regularity as in Animals. There is scarcely a vegetable of any kind that is not rejected as food by some animals, and ardently desired by others. Numerous also are the plants which, at the same time that they afford only the natural nourishment to some, are, by others, cautiously shunned, as poisonous and destructive. All this has been contrived, by the Author of Nature, for the best and wisest purposes.

Every species of animal is admirably calculated for the *climate* in which it resides, and for its own peculiar mode of life. In the dreary northern regions, the dark animals become white, to evade, by their resemblance to the prevailing color of the country, the quick sight of their enemies. Their clothing, also, during winter, becomes nearly double what it is in the summer. In torrid climates the Sheep, as it is stated, loses his fleece, and is covered with hair. The Camel, that traverses the burning sands of the desert, is formed with soft, spongy feet, which the heat cannot crack: it has a reservoir of water, which enables it to resist for many days the attacks of thirst, in a country where water is not to be had; and it is contented with browsing on such miserable food as is to be met with in its progress. Innumerable other instances might be mentioned; but these are reserved for the body of the work.

In vegetables, we observe similar marks of superintendence. Some are alpine, and can exist only on the summits of mountains; some grow in marshes; others on the plains, &c; and each of these is exactly adapted to its peculiar situation. The plants of the desert are nearly all succulent, and able to bear the privation of moisture for an astonishing length of time. Those that are found on the sea-shore could not, in many instances, be retained in their situation, did not their roots become so matted among the sand, or strike so deeply down, as to render them immovable by all the shocks they sustain, either from the wind or water. It is also a remarkable circumstance, that Evergreens grow principally in the hottest climates, where they afford a natural shelter to the various animals, from the excessive heats to which they would otherwise be exposed.

If we attend to the contrivances of Providence for the preservation of animals during the winter of cold climates, we shall have an additional source of admiration. Most of those which feed on insects, either emigrate to other countries, or become torpid. Insects themselves, unable to bear the extreme cold, generally lie hidden within their cases, from which, at the approach of Spring, they burst and fly forth. Some animals, as the Beaver, Squirrels, &c., that feed on such vegetables as can be preserved through the winter, do not sleep, but live in their retreats on those provisions which their Creator has instructed them how to store up in the summer.

The preservation of the ffspring of all animals is not less wonderful than this. Quadrupeds are furnished with certain receptacles, in which is secreted a fluid called milk. With this their young ones are nourished till their stomachs are able to bear, and their teeth to chew, more solid food. As Birds are destitute of this species of nutriment, their offspring are able, as soon as hatched, to take into their stomachs such food as the parents collect for them; and the insect tribes are generally brought to life in a nidus that itself affords them nourishment.

It is also deserving of remark, that birds of the same species always form their *nests* of similar materials, laid in the same order, and exactly of the same figure; so that, whenever a nest is seen, the bird that constructed it is immediately known. This is invariable in all birds and in all countries; with those taken, when just hatched, from the nest, and brought up in a cage, as well as with those that have all their lives been in a wild state.

From the animal we will once again turn to the vegetable kingdom, for the purpose of examining the contrivances of Nature there. If we look around us, we shall find it a difficult matter to discover an entirely barren spot. If, by any devastation such be made, it does not long remain unoccupied. Seeds are soon scattered over it; the downy seeds of the thistles, wafted by the winds, are the first to take root, and after these comes the germs of various other plants, till at length the whole space is filled. If a rock be left entirely bare by the receding of water, the minute crustaceous Lichens in a few years entirely cover it. These, dying, turn to earth, and the imbricated Lichens now have a bed to strike their roots into. These also die, and various species of Mosses succeed; and when, after some time, a sufficiency of mould has been formed, the larger plants, and even shrubs, take root and live.

The *quickness of vegetation* both in hot and cold climates is so astonishing, as to be perfectly unaccountable, were we not able to refer it to a most exalted wisdom.

The following is the Calendar of a Siberian or Lapland Year.

June 23. Snow melts. July 17. Plants at full growth. Aug. 10. Plants shed their seed.
July 1. Snow gone. 25. Plants in flower. 18. Snow.
9. Fields quite green. Aug. 2. Fruits ripe. From Aug. 18, to June 23, Snow and Ice.

Thus it appears that only a month elapses from the time when the plants first emerge from the ground to the ripening of their seeds; and that Spring, Summer, and Autumn are crowded into the short space of forty-six days.

Again, in the torrid climates, where a scorching heat prevails through the greatest part of the year, we have a similar wonderful contrivance. In India, when the wet season commences, the rain falls in such abundance, that, in the course of a few hours, ponds of considerable depth are formed in every hollow place, in many of which there had not for several preceding months, been the least appearance of vegetation or even of moisture. No sooner, however, does the rain begin to fall, than vegetation commences; and, in less than twenty-four hours, the appearance of verdure can be distinctly perceived, whichever way the eye is directed. But the most surprising circumstance is, that very shortly after this verdure begins to appear, these newly-formed ponds are found swarming with fish of such size as to admit of being taken with nets, and to afford food for man. This circumstance is related by Dr. Anderson, on the authority of a very respectable person of Bombay, and was not stated until the fullest inquiries had been made, and the most satisfactory evidence had appeared respecting it.

Thus does the uniform voice of Nature exclaim aloud, that "the merciful and gracious Lord hath so done his marvellous works, that they ought to be had in remembrance." The whole material system, throughout heaven and earth, presents a varied scene rich in use and beauty, in which nothing is lost, and in which the meanest and minutest creatures have their full designation and importance.—"Thus saith the Lord, thy Redeemer, and he that formed thee from the womb, I am the Lord, who maketh all things, who stretcheth forth the heavens alone, and spreadeth abroad the earth by myself."

From the preceding observations, it appears that Natural History is capable of yielding to us innumerable subjects for both moral and religious study. Its chief tendency ought to be, to lead us, from the admiration of the works to the contemplation of their Author; to teach us to look, through Nature up to Nature's God. It is a study which terminates in the conviction, the knowledge, and the adoration of that gracious and merciful Being, to whose goodness alone we are indebted for every happiness that we enjoy.

These are thy glorious works, Parent of Good,
Almighty! Thine this universal frame;
Thus wondrous fair, thyself how wondrous then!
Unspeakable, who sitt'st above these heav'ns,
To us invisible, or dimly seen
In these thy lowest works; yet these declare
Thy goodness beyond thought, and power divine!

ON THE STRUCTURE AND FUNCTIONS

OF ANIMALS IN GENERAL.

MAMMIFEROUS ANIMALS.

(QUADRUPEDS AND WHALES.)

THE class of animals denominated by Linnæus, MAMMALIA, comprehends all those which nourish their offspring with milk supplied from their own bodies, and which have, flowing in their veins, a warm and red blood. It includes the *whales*, which from their external shape and habits of life, might be considered as fish. These inhabit exclusively the water, an element in which none of the quadrupeds can long subsist; and they are furnished, like the fish, with fins; but, in every essential characteristic, they exhibit an alliance to the quadrupeds. Like the quadrupeds they have warm blood, produce their offspring alive, and nourish them with milk furnished from teats. In their internal structure they are, likewise, in a great measure, allied to the quadrupeds.

The bodies of nearly all the mammiferous animals are covered with *hair*, a soft and warm clothing, liable to little injury, and bestowed in quantity proportioned to the necessities of the animals, and the climates which they inhabit. In most of the aquatic quadruped's this covering, from its too free absorption of moisture, is wanting.

The *head*, in all the higher orders, is the seat of the principal organs of sense—the mouth, the nose, the eyes, and the ears. It is through the *mouth*, that they receive their nourishment. This contains the *teeth*, which, in most of the Mammalia, are used not only for the mastication of food, but as weapons of offence. They are inserted into two moveable bones called jaws. The front teeth, the office of which is to cut, are wedge-shaped, and so placed that, in action, their sharp edges are brought into contact, and thus divide the aliment. Next to the front teeth, on each side, are the canine teeth, or tusks. These are longer than the other teeth, conical and pointed; and their use is to tear the foo. dThe teeth at the back of the jaw, between which the food is masticated, are called grinders. In animals which live on vegetables, these are flattened at the top; but in carnivorous animals, their upper surfaces are furnished with sharp and conically-pointed protuberances. From the numbers, form, and disposition of the teeth, the various genera of quadrupeds have been arranged.

The *nose* is a cartilaginous body, pierced with two holes called nostrils. In some animals this is prominent, in others flat, compressed, turned upward, or bent downward. In beasts of prey it is often either longer than the lips, or of equal length with them. In a few animals it is elongated into a movable trunk or proboscis; and in one tribe, the Rhinoceros, is armed with a horn.

The *eyes* of quadrupeds are, for the most part, defended by movable eyelids, the outer margins of which are furnished with hairs, called eye-lashes. The opening of the pupil is in general circular; but in some animals, as Cats and Hares, it is contracted into a perpendicular line; and in Oxen, Horses, and a few others, it forms a tranverse bar. The opening contracts during the day, in order that the very sensible retina may not be irritated by the rays of light; and, on the contrary, is expanded in the dark, to allow as many rays to pass as possible.

The *ears* are openings generally accompanied by a cartilage which defends and covers them, called the external ears. In aquatic animals the latter are wanting, as, in them, the sounds are transmitted merely through orifices in the head, which have the name of *auditory holes*. The most defenceless animals are very delicate in their sense of hearing, as are likewise most of the beasts of prey. In wild animals the ears are erect and somewhat funnel-shaped, capable of having their openings turned towards the quarter from which the sounds proceed; but in those that are tame and domestic, the ears are, for the most part, long and pendulous.

The head is joined to the body by the neck; and all those animals that often extend their arms or anterior feet forward, either to seize upon objects, as the Monkeys, or to fly, as the Bats, have, annexed to the upper part of the thorax, *clavicles* or collar-bones. The clavicle of the Mole is particularly remarkable, on account of its thickness, which exceeds its length. The collar-bones are wanting in such animals as use their anterior extremities for progressive motion only.

Most of the Mammiferous Animals walk on four *feet*. These are usually divided at the extremities into toes or fingers; but the extremities of some, as those of the Horse, end in a single corneous substance, called a hoof. The toes of a few of the quadrupeds terminate in broad flat nails, and of most of the others in pointed claws. Sometimes the toes are connected together by a membrane: this is the case in animals that reside much in the water. Sometimes, as in the Bat, the digitations of the anterior feet are greatly elongated, and have their intervening space filled by a membrane which extends round the hinder legs, and the tail, and by means of which they are enabled to rise into the air.

Man, and a certain number of animals, are capable of seizing objects, by surrounding and grasping them with their fingers. For this purpose the fingers are separate, free, flexible, and of considerable length. Man has such fingers on his hands only; but Apes and Lemurs have them both on their hands and feet.

With regard to the *internal structure* of Quadrupeds: that warm and red fluid which is calledblood, flows through the body, from the heart, its common reservoir, by a series of vessels called arteries, and returns by another series, denominated veins. During the circulation, various fluids are separated from the blood, and are carried through little vessels to be lodged in proper reservoirs. These fluids, which are termed *secretions*, are adapted to various purposes in the system.

The *lungs* of Mammiferous Animals consist of two lobes, and are placed within the thorax or chest. Into these the atmospheric air is inspired from the mouth; and in them the vital air and the matter of heat are separated; the former, containing the only principle proper for the maintenance of life, and the latter being necessary towards keeping up the fluidity of the blood. The mephitic air, which remains after the separation, is expired. This act of drawing in the atmospheric air, separating the vital air and matter of heat, and ejecting the mephitic air, is termed respiration.

In *digestion* it is that the juices calculated to nourish and support the body become separated from the other less useful parts of the food. Reduced to a pulp, by means of the teeth and saliva, these pass through a canal which terminates in a large bag or reservoir, called the stomach. Here the aliment, penetrated and further dissolved by new juices, undergoes a trituration, or kind of grinding, from the action of the stomach; and the nutritive juices, which, on their union, are denominated *chyle*, are separated. These juices are taken up by little vessels called *lacteals*, and become converted into new blood and flesh. The alimentary canal again contracts on leaving the stomach, and, arranged in a great variety of folds, acquires the name of intestines. The residue of what is not converted into *chyle* traverses these numerous sinuosities, and at last is expelled the body.

The bodies of all Mammiferous Animals are supported by a frame of bones called a *skeleton*. To these bones are attached the *muscles* or flesh, assemblages of fibres held together by membranes, and terminating in a kind of cords, which are denominated *tendons*. The muscles, when excited, produce motion in the different parts of the body; and it is their action which gives to all animals the power of changing their place, and performing the various movements that are necessary to their wants.

The sensation of animals arises from an irritation taking place on the ends of certain chords called *nerves*. These are either prolonged from the spinal marrow, or they are united in pairs in the brain.

OF CETACEOUS ANIMALS, AS DISTINCT FROM QUADRUPEDS.

The Cetaceous animals constitute the seventh Order of Mammalia. They inhabit chiefly the seas of the Polar regions; yet, like the quadrupeds, they breathe air by means of true lungs. They are consequently compelled to rise to the surface of the water to respire; and on this account it is that they always sleep on the surface. Their nostrils are open, and terminate on the summit of the head; this peculiarity of structure enables them to draw in air without raising their mouth out of the water. The nostrils also serve them as canals for expelling the superfluous water which they take in at the mouth every time they attempt to swallow their prey. They have also warm, red blood; and they produce and suckle their offspring in the same manner as the quadrupeds. They likewise resemble them in having movable eye-lids and true bones; and in their power of uttering loud and bellowing sounds, a faculty altogether denied to the scaly tribes.

The Cetaceous animals have a smooth skin, not covered with hair. Their feet are very short; those on the fore-part of the body being formed like fins, and the hinder ones being united into an horizontal tail.

The fat of these animals is what we term blubber. It does not coagulate in our atmosphere, and is probably the most fluid of all animal fats. It is found principally on the outside of the muscles, immediately under the skin, and is in considerable quantity. The blubber appears principally to be of use in poising their bodies: it also prevents the immediate contact of the water with the flesh, the continued cold of which might chill the blood; and, in this respect, it serves a purpose similar to that of clothing to the human race.

It is probable that the Cete swallow all their food whole, for they are not furnished with instruments capable either of dividing or masticating it. In place of teeth, the mouths of some of the whales are supplied with laminæ of horn called *whalebone*.

This substance is attached to the interior part of the upper jaw, is extremely elastic, and consists of thin plates of considerable length and breadth, placed in several rows, encompassing the outer skirts of the upper jaw, like teeth in other animals. The laminæ are parallel to each other, having one edge towards the circumference of the mouth, and the other towards the interior. The outer row is composed of the longest plates, some being fourteen or fifteen feet in length, and twelve or fifteen inches broad: but towards the anterior and posterior parts of the mouth they gradually become very short.—The whalebone is supposed to be principally of use in the retention of food till swallowed: for, as the fish, and other marine animals, which the whales catch, are very minute when compared with the size of their mouth, a quantity sufficient for their nutriment, without some such guard as this, could scarcely be retained.

From these animals being resident entirely in the water, and generally far removed from the haunts of man, we cannot be supposed to have acquired any very correct knowledge of their manners or habits of life: even their species are but imperfectly known.

The Mammiferous Animals have been divided by Linnæus into seven orders.

1. *Primates*, which have four front teeth in each jaw; and one canine tooth on each side in both jaws. The principal animals of this order are the Apes, Lemurs, and Bats.

2. *Bruta*. These are entirely destitute of front teeth. The tribe consists of the Sloths, Ant-eaters. Rhinoceros, Elephant, and Manati.

3. *Feræ*. The Feræ have generally six front teeth in each jaw; and one canine-tooth on each side, in both jaws. They consist of Seals, Dogs, Cats, Weasels, Otters, Bears, Kangaroos, Moles, Shrews, and Urchins.

4. *Glires*. The animals denominated Glires have two long front-teeth in each jaw; and no canine-teeth. They consist of the Porcupines, Cavies, Beavers, Rats, Marmots, Squirrels, Dormice, Jerboas, Hares, and Hyraxes.

5. *Pecora*. The Pecora are destitute of front-teeth in the upper-jaw, and on their feet have cloven hoofs. All the species ruminate or chew their cud. The tribes are the Camel, Musk, Deer, Giraffe, Antelope, Goat, Sheep, and Ox.

6. *Belluæ*. These have obtuse front-teeth in each jaw, and undivided hoofs on their feet; and consist of the Horses, Hippopotamus Tapir, and Hogs.

7. *Cete* or *Whales*. Instead of feet, the Cete, which comprise the Närwal, Whale, Cachalot, and Dolphin tribes, have fins. On the front and upper part of the skull there are spiracles or breathing holes. The teeth differ in the different species; and the tail is flattened horizontally. They are inhabitants only of the sea

BIRDS.

There is no division of the animal world in which we are more led to admire the wisdom of the Supreme Being, than in the different feathered tribes. Their structure and habits of life are wonderfully fitted for the various functions they have to perform. Their bodies are clad with feathers, which form an envelope much lighter than hair. These lie over each other close to the body, like the tiles of a house; and are arranged from the fore-part backward, by which means the animals are enabled the more conveniently to cut their way through the air. For this purpose also the head is small and the bill somewhat wedge-shaped; the neck is long, and easily movable in all directions; and the body slender, sharp on the under side, and flat or round on the back. The bones likewise are hollow, and very light comparatively with those of terrestrial animals. For the purpose of giving warmth to the body, a short and soft down fills up all the vacant spaces between the shafts of the feathers.

Birds are enabled to rise into and move from place to place in the air, by means of the members that are denominated *wings*. The muscles by which the wings are move are exceedingly large; and have been estimated, in some instances, to constitute not less than a sixth part of the weight of the whole body. When a bird is on the ground, and intends to fly, he takes a leap, stretches his wings from the body, and strikes them downward with great force. By this stroke the body is thrown into an oblique position. That part o fthe force which tended upward is destroyed by the weight of the bird; and the horizontal force serves to carry him forward. The stroke being completed, he moves up his wings. These being contracted, and having their edges turned upward, meet with little resistance from the air. When they are sufficiently elevated, the bird makes a second stroke downward, and the impulse of the air again moves him forward. These successive strokes act as so many leaps taken in air. When the bird wants to turn to the right or left, he strikes strongly with the opposite wing, and this impels him to the proper side. The tail acts like the rudder of a ship; except that it moves him upward or downward, instead of sideways. If the bird wants to rise, he raises his tail; and if to fall, he depresses it; whilst he is in an horizontal position, it keeps him steady.

A bird, by spreading his wings, can continue to move horizontally in the air for some time, without striking them; because he has acquired a sufficient velocity, and his wings, being parallel to the horizon, meet with but little resistance. When he begins to fall, he can easily steer himself upward by his tail, till the motion he had acquired is nearly spent; he must then renew it by two or three more strokes of his wings. On alighting, he expands his wings and tail full against the air, that they may meet with all the resistance possible.

The centre of gravity in birds is somewhat behind the wings; and, to counterbalance this, most of them may be observed to thrust out their head and neck in flying. This is very apparent in the flight of Ducks, Geese, and several other species of water-fowl, whose centre of gravity is further backward than in the land birds. In the Heron, on the contrary, whose long head and neck, although folded up in flight, overbalance the rest of the body, the long legs are extended, in order to give the proper counterpoise, and to supply what is wanting from the shortness of the tail.

The *feathers* of birds would perpetually imbibe the moisture of the atmosphere; and, during rain, would absorb so much wet, as to impede their flight, had not the wisdom of Providence obviated this inconvenience by a most effectual expedient. They are each furnished on the rump with two glands, in which a quantity of unctuous matter is constantly secreting. This is occasionally pressed out by the bill, and used for the lubrication of the feathers. The birds that share, as it were, the habitations of man, and live principally under cover, do not require so great a supply, and therefore are not provided with so large a stock of this fluid, as those that rove abroad, and reside in the open element. It is on this account that poultry, when wet, make the ruffled and uncomfortable appearance that we observe.

As birds are continually passing among the hedges and thickets, their *eyes* are defended from injury by a membrane, which can at pleasure be drawn over the whole eye like a curtain. This is neither opaque nor wholly pellucid, but is somewhat transparent. In birds we find that the *sight* is much more piercing, extensive, and exact, than in the other orders of animals. The eye is large in proportion to the bulk of the head. This is a superiority conferred upon them not without a corresponding utility; it seems even indispensable to their safety and subsistence. Were this organ dull, or were it, in the least degree, opaque, the rapidity of their motion would expose them to the danger of striking against various objects in their flight. In this case their celerity, instead of being an advantage, would become an evil, and their flight would be restrained by the danger resulting from it. Indeed, we may consider the velocity with which an animal moves, as a sure indication of the perfection of its vision.

Birds *respire* by means of air-vessels, that are extended through their whole body, and adhere to the under surface of the bones. These, by their motion, force the air through the true lungs, which are very small, seated in the uppermost part of the chest, and closely braced down to the back and ribs. The use of this general diffusion of air through the bodies of birds, is to prevent their respiration from being stopped or interrupted by the rapidity of their motion through a resisting medium. The resistance of the air increases in proportion to the celerity of the motion; and were it possible for a man to move with swiftness equal to that of a Swallow, the resistance of the air, as he is not furnished with reservoirs similar to those of birds, would soon suffocate him.

Some species of birds are confined to particular countries; others are widely dispersed; and several change their abode at certain seasons of the year, and *migrate* to climates better suited to their temperament or mode of life than those which they leave. Many of our own birds, directed by a peculiar and unerring instinct, retire, before the commencement of the cold season, to the southern districts, and again return in the spring. The causes usually assigned for migration are, either a defect of food, or the want of a secure and proper asylum for incubation, and the nutrition of their offspring.

It appears from very accurate observations, founded on numerous experiments, that the peculiar notes, or *song*, of the different species of Birds, are acquired, and are no more innate than language is in man. The attempt of a nestling bird to sing, may be compared with the imperfect endeavor of a child to talk. The first essay seems not to possess the slightest rudiments of the future song; but, as the bird grows older, and stronger, it is not difficult to perceive what he is attempting. Whilst the scholar is thus endeavoring to form his song, when he is once sure of a passage, he commonly raises his tone; but when unable to execute the passage, he drops it. What the nestling is thus not thoroughly master of, he hurries over; lowering his tone, as if he did not wish to be heard, and as if he could not yet satisfy himself. A common Sparrow, taken from the nest when very young, and placed near a Linnet and Goldfinch, adopted a song that was a mixture of the notes of these two. Three nestling Linnets were educated, one under a Sky-lark, another under a Wood-lark, and the third under a Tit-lark; and, instead of the song peculiar to their own species, they adhered entirely to that of their respective instructors. A Linnet taken from the nest when about three days old, and brought up in the house of Mr. Matthews, an apothecary, at Kensington, having no other sounds to imitate, almost articulated the words "pretty boy;" and a few other short sentences. The owner of this bird said, that it had neither the note nor the call of any bird whatever. It died in the year 1772.

These, and other well-authenticated facts, tend to prove that Birds have no innate notes, but that, like mankind, the language they first learn after they come into the world, is generally that which they adopt in after life. It may, however, seem unaccountable, why, in a wild state, they adhere so steadily as they do to the song of their own species only, when the notes of so many others are to be heard around them. This evidently arises from the attention that is paid by the nestling bird to the instructions of its own parent only, and it is generally disregarding the notes of all the rest. Persons, however, who have an accurate ear, and have studied the notes of birds, can very often distinguish some that have a song mixed with the notes of other species.

The *food* of birds is of course very different in the different kinds. Some are

altogether carnivorous; others, as many of the web-footed tribes, live on fish; some on insects and worms, and many on fruits or grain. The extraordinary powers of the gizzard in the graminivorous tribes, in comminuting their hard food, so as to prepare it for digestion, are such as almost to exceed credibility. In order to ascertain the strength of these stomachs, the Abbe Spallanzani made many cruel, though at the same time curious and not uninteresting experiments. Tin tubes full of grain were forced into the stomachs of Turkeys; and, after remaining twenty hours, were found to be broken, compressed, and distorted in a most irregular manner. The stomach of a Cock, in the space of twenty-four hours, broke off the angles of a piece of rough, jagged glass; and, on examining the gizzard, no wound or laceration appeared. Twelve strong tin needles were firmly fixed into a ball of lead, with their points projecting about a quarter of an inch from the surface; thus armed, it was covered with a case of paper, and forced down the throat of a Turkey. The bird retained it a day and a half without exhibiting the least symptom of uneasiness. When the Turkey was killed, the points of nearly all the needles were found to be broken off close to the surface of the ball. Twelve small lancets, very sharp both at the points and edges, were fixed in a similar ball of lead. These were given in the same manner, to a Turkey-cock, and left eight hours in the stomach; at the expiration of which time that organ was opened, but nothing appeared except the naked ball; the twelve lancets having been all broken to pieces. From these facts it was concluded, that the stones so often found in the stomachs of many of the feathered tribes, are highly useful in assisting the gastric juices to grind down the grain and other hard substances which constitute their food. The stones themselves, also, being ground down and separated by the powerful action of the gizzard, are mixed with the food, and no doubt contribute to the health as well as to the nutriment of the animals.

All birds are oviparous, or produce *eggs*, from which, after the process of incubation, the young are extruded. These eggs differ in the different species, in number, figure, and color. They contain the rudiments of the future offspring; for the maturation and bringing to perfection of which, in the incubation, there is a bubble of air at the large end, betwixt the shell and the inside skin. It is supposed that, from the warmth communicated by the sitting bird to this confined air, its spring is increased beyond its natural tenor, and, at the same time, its parts are put into motion by the gentle rarefaction. Hence pressure and motion are communicated to the parts of the egg; and these, in some unknown manner, gradually promote the formation and growth of the young one, till the appointed time of its exclusion. The use of that part of the egg called the treddle, is not only to retain the different liquids in their proper places, but also to keep the same part of the yolk uppermost; which it will effectually do, though the egg be turned nearly every way. The mechanism seems to be this: the treddle is specifically lighter than the white in which it swims; and being connected with the membranes of the yolk, at a point somewhat out of the direction of its axis, this causes one side to become heavier than the other. Thus the yolk, being made buoyant in the midst of the white, is, by its own heavy side, kept with the same part always uppermost.

The *nests* of birds are, in general, constructed with astonishing art; and with a degree of architectural skill and propriety, that would foil all the boasted talents of man to imitate.

> Mark it well, within, without:
> No tool had he that wrought; no knife to cut,
> No nail to fix, no bodkin to insert,
> No glue to join; his little beak was all.
> And yet, how neatly finish'd! What nice hand,
> With every implement and means of art,
> And twenty years' apprenticeship to boot,
> Could make me such another? Fondly then
> We boast of excellence, whose noblest skill
> Instinctive genius foils.

In most of the species both the male and female assist in this interesting operation. They each bring materials to the place: first sticks, moss, or straws, for the foundation and exterior: then hair, wool, or the down of animals or plants, to form a soft and commodious bed for the eggs, and for the bodies of their tender young, when hatched. The outsides of the nests bear in general so great a resemblance in color

to the surrounding foliage or branches, as not easily to be discovered even by persons who are in search of them.

This is one of those numerous and wonderful contrivances which compel us to believe that every part of the creation is under the protection of a superintending Being, whose goodness knows no bounds. Without this, what can we suppose it is that instigates a creature which may never before have had young, to form a nest, hollow, for the purpose of containing eggs; (things that as yet it knows nothing of;) and of concentrating a necessary proportion of heat for the incubation? Without this, what can we suppose it is that dictates the necessity of forming the outside of this nest with coarse materials, as a foundation, and of lining its interior with more delicate substances? How do these animals learn that they are to have eggs, and that these eggs will require a nest of a certain size and capacity? Who is it that teaches them to calculate the time with such exactness, that they never lay their eggs before the receptacle for them is finished? No one can surely be so blind as to observe all this, and not to perceive the superintendence of a beneficent wisdom influencing every operation.

The *classification* of birds is principally founded on their habits of life; and on the formation of their external parts, particularly of their bills. The grand division is into LAND BIRDS and WATER BIRDS.

LAND BIRDS.

1. *Rapacious Birds* (*accipitres*), have their bill hooked; and on each side of the upper mandible there is an angular projection. They consist of Vultures, Eagles or Hawks, and Owls. These birds are all carnivorous, and associate in pairs; and the female is generally larger and stronger than the male.

2. *Pies* (*picæ*). These have their bills sharp at the edge, compressed at the sides, and convex on the upper surface. The principal genera are Shrikes, Crows, Rollers, Orioles, Grackles, Humming-birds, Parrots, Toucans, Cuckoos, Woodpeckers, Hornbills, and Kingfishers. Some of them associate in pairs, and others congregate. They live on various kinds of food; and usually build their nests in trees, the male feeding the female during the process of incubation.

3. *Passerine Birds* (*passeres*), have a conical, sharp-pointed bill. To this order belong the Finches, Grosbeaks, Buntings, Thrushes, Fly-catchers, Swallows, Larks, Wagtails, Titmice, and Pigeons. While breeding they live chiefly in pairs; and the nests of several of the species are of curious and singular construction. The greater number of them sing. Some of them subsist on seeds, and others on insects.

4. *Gallinaceous Birds* (*gallinæ*). The bills of these birds have the upper mandible considerably arched, Pheasants, Turkeys, Peacocks, Bustards, Pintadoes, and Grouse, all belong to this order. They live principally on the ground; and scratch the earth with their feet for the purpose of finding grain and seeds. They usually associate in families, consisting of one male and several females. Their nests are artlessly formed on the ground; and the females produce a numerous offspring

WATER BIRDS.

5. *Waders* (*grallæ*). These have a roundish bill, and a fleshy tongue; and the legs of most of the species are long. The principal genera are the Herons, Plovers, Snipes, and Sandpipers, which live for the most part among marshes and fens, and feed on worms and other animal productions. They form nests on the ground.

6. *Swimmers* (*anseres*). The bills of these birds are broad at the top, and covered with a membranaceous skin. The tribes best known are the Ducks, Auks, Penguins, Petrels, Pelicans, Guillemots, Gulls, and Terns. They live chiefly in the water, and feed on fish, worms, and aquatic plants. Most of the species are polygamous, and construct their nests among reeds or in moist places. The females lay many eggs.

AMPHIBIOUS ANIMALS.

Under this title, from the circumstances of their living occasionally both on land and in water, Linnæus has arranged the oviparous quadrupeds, usually denominated *Reptiles*, and the *Serpents*. It may be considered exceptionable, on account of some individuals being confined to only one of those elements; but these are so few, as not to affect the general denomination.

The amphibious animals have ever excited in mankind a great degree of abhorrence, originating in a dread of their supposed, and, in some instances, of their undoubtedly poisonous qualities; in the unpleasant sensation of touching perfectly cold animals, and in their often ugly and squalid forms. This abhorrence is so general, in all countries, and among all people, that, even where the species are in themselves innoxious and beautiful, it is not to be conquered without difficulty. To the philosopher, however, the various tribes afford an inexhaustible fund of instruction and delight. The form, the destination, and the importance of these animals in the grand scheme of nature, are truly admirable, and have been found amply to repay the care, the danger, and the trouble, which have attended the investigation of them.

By far the greater number of the species live in retired, watery, and shady places, where they seem stationed to prevent the excessive multiplication of water-animals and insects; and themselves, in many instances, to serve as food for fishes and birds. When they are able to obtain it, they generally devour a great quantity of food at a time, but this is digested slowly, and they are endowed with the power of sustaining abstinence that would infallibly prove fatal to any of the higher orders of Animals. Several of the species have been known to exist, in apparent health and vivacity, for many months, without any food whatever. Nearly all the Amphibia are furnished with *teeth*, but these seem of little other use than for seizing and retaining their prey; as all their food is swallowed whole.

Their *respiration* is not, as in the higher animals, carried on at certain short and regular intervals. The Amphibia ,from the peculiar structure of their organs of respiration, are able to suspend it almost at pleasure. It is in consequence of this that they are enabled to support their change of element without injury. Their *blood* is red, but cold and in small quantity.

The bodies of some of these animals are protected by a hard and horny shield or covering; and others by a coriaceous integument. Some of them have scales; and others soft pustular warts or protuberances. Their *bones* are more cartilaginous than those either of quadrupeds or birds. Several of the species, as the Frogs and some of the Lizards, are altogether destitute of ribs.

The *eyes* of the Amphibia are in general large and bright. The *ears* have neither external valve nor canal; but the tympanum is level with the head, and, in many of the animals, covered with the skin or scales.

All the Amphibia are extremely tenacious of life, and some of them will continue to move and exert animal functions even destitute of their head or heart. Many of the species possess a high degree of reproductive power; and, when their feet or tail are by accident destroyed, others will grow in their place. Most of them exhale loathsome odors, owing probable to the foulness of their abode, or the substances on which they feed, or perhaps to the length of time that is occupied in digesting their food.

The young of all the tribes are produced from eggs, which, after the parent animals have deposited them in a proper place, are hatched by the heat of the sun. Some of the species have their eggs covered with a hard, calcareous shell; whilst those of others have a soft, tough skin or covering, not much unlike wet parchment; the eggs of several are perfectly gelatinous. In those few that produce their offspring alive, the eggs are regularly formed, but are hatched within the bodies of the females; this is the case with the Vipers and some others of the Serpents.

In cold and temperate climates, nearly all the Amphibia pass the winter in a torpid state. During this season they are often found perfectly stiff, in holes under

ice, or in water. They continue thus till revived by the returning warmth of spring. They then become reanimated, change their skin, and appear abroad in a new coat. Many of them cast their skins frequently in the year; but Tortoises and some other Reptiles have an osseous covering which they do not change.

The Amphibia, though they are occasionally found in great numbers together, cannot be said to congregate, since they do nothing in common, and, in fact, do not live in a state of society. The flesh and eggs of some of the species constitute a palatable and nutritious food.

Of the Serpents. There is much geometrical elegance in the sinuous motion of the Serpent tribe. Their back-bone consists of movable articulations, and runs through the whole length of their body. The breast and abdomen are surrounded with ribs. Some of the species can render their bodies perfectly stiff, and by this means they are enabled to spring with great force and velocity on their prey.

Most of them are covered with scales; and Linnæus has endeavored to mark the different species by the number of scaly plates on the abdomen and beneath the tail. Experience, however, has proved, that these are too variable and uncertain to be depended on.

The head is connected to the trunk without the intervention of a neck; and their jaws are so formed that the animals are able to swallow bodies as thick and frequently even thicker than themselves. The tongue is slender and cleft.

The *poisonous* Serpents, which are not more than one sixth of the whole number of species, differ from the others in having long tubular fangs on each side of the head calculated to convey the venom from a bag or receptacle at the base of these fangs into the wound made by their bite. The venomous Serpents have only two rows of true or proper teeth, (that is, such as are not fangs,) in the upper jaw, whilst all others have four. A head entirely covered with small scales is also in some degree a character, but by no means a universal one, of poisonous species; as are also scales on the head and body furnished with a ridge or prominent middle line.

The Amphibia are divided by Linnæus into two orders: *viz.* Reptiles and Serpents

The *Reptiles* are furnished with legs. They have flat and naked ears, without auricles. The principal tribes are, Tortoises, Lizards, and Frogs.

Serpents are destitute of feet. Their jaws are dilatable and not articulated; and they have neither fins nor ears.

FISHES.

Were we acquainted with no other animals than those which inhabit the land, and breathe the air of our atmosphere, it would appear absurd to be told that any race of beings could exist only in the water: we should naturally conclude, from the effect produced on our own bodies when plunged into that element, that the powers of life could not there be sustained. But we find, from experience, that the very depths of the ocean are crowded with inhabitants, which, in their construction, modes of life, and general design, are as truly wonderful as those on the land. Their history, however, must always remain imperfect, since the element in which they live is beyond human access, and of such vast dimensions, as to throw by far the greater part of them altogether out of the reach of man.

That they are in every respect, both of external and internal conformation, well adapted to their element and modes of life, we are not permitted to doubt. The body is, in general, slender, flattened at the sides, and always somewhat pointed at the head. This enables them, with ease, to cut through the resisting medium which they inhabit. Some of them are endowed with such extraordinary powers of progressive motion, that they are able not only to overtake the fastest sailing vessels, but, during the swiftest course of these, to play round them without any apparently extraordinary efforts.

Their bodies are in general covered with a kind of horny *scales*, to keep them from being injured by the pressure of the water. Several of them are enveloped with a fat and oily substance, to preserve them from putrefaction, and to guard them from extreme cold. They *breathe* by means of certain organs that are placed on each

side of the neck, and called gills. In this operation they fill their mouth with water, which they throw backward, with so much force as to lift open the great flap, and force it out behind. And in the passage of this water, among the feather-like processes of the gills, all, or at least the greatest part, of the air contained in it, is left behind, and carried into the body to perform its part in the animal economy. In proof of this fact, it has been ascertained that, if the air be extracted from water into which fish are put, they immediately come to the surface and gasp as if for breath. Hence, distilled water is to fish what the vacuum formed by an air-pump is to most other animals. This is the reason why, in winter, when a fish-pond is entirely frozen over, it is necessary to break holes in the ice, not that the fish may come to feed, but that they may come to breathe. Without such precaution, if the pond be small, and the fish be numerous, they will die from the corruption of the water.

Fishes are nearly of the same specific gravity with water, and *swim* by means of their fins and tail. The muscular force of the latter is very great. Their direct motion is obtained by moving the tail from one side to the other, with a vibrating motion; and, by strongly bending the tail sideways, this part of their body acts like the rudder of a ship, and enables them to move in an opposite direction. The fins of a fish keep it upright, especially the belly-fins, which act like feet; without these it would float with its back downward, as the centre of gravity lies near the back.

In addition to the fins and tail, the *air-bladder* is of material assistance to fish in swimming, as it is by means of this that they increase or diminish the specific gravity of their bodies. When, by their abdominal muscles, they compress the air contained in this bladder, the bulk of their body is diminished, their weight compared with that of the water, is increased, and they consequently sink. If they want to rise, they relax the pressure of the muscles, the air-bladder again acquires its natural size, the body is rendered more bulky, and they ascend towards the surface. This bladder lies in the abdomen, along the course of the back-bone. In some fish it is single, and in others double. The air appears to be conveyed into it from the blood, by means of vessels appropriated to that purpose, and it can be discharged thence either into the stomach or the mouth. Those fish which are destitute of air-bladders have much less facility in elevating themselves in the water than any others. The greater number of them, consequently, remain at the bottom, unless the form of their body enables them to strike the water downwards with great force. This the Skate, the Thornback, and other species of *Rays* do with their large pectoral fins, which are of such size and strength as almost to resemble wings; and the mode in which these fish elevate themselves in the water, is precisely the same as that which is employed by birds in flying.

The *teeth* of fish are usually situated in their jaws: in some species, however, there are teeth on the tongue and palate, and even in the throat. These are generally sharp-pointed and immovable; but in the Carp they are obtuse, and in the Pike so movable as to appear fixed only to the skin. The *tongue* is in general motionless and fleshy. Being furnished with *nostrils* and olfactory nerves, there can be little doubt that fishes possess the sense of smelling.

The *bones* of these animals are formed of a kind of intermediate substance, between true bones and cartilages. The back-bone extends through the whole length of the body, and consists of vertebræ, strong and thick toward the head, but weaker and more slender as they approach the tail. The ribs are attached to the processes of the vertebræ, and enclose the breast and abdomin. Several fish, as the Rays, have no ribs; and others, as the Eel and Sturgeon, have very short ones. In many of the species there are small bones between the muscles, to assist their motion.

The *sight* of fishes is perhaps the most perfect of all their senses. The eye, in general, is covered with the same transparent skin that covers the rest of the head; the use of which is probably, to defend this organ in the water, for none of the species have eyelids. The globe of the eye is somewhat depressed in front, and it is furnished behind with a muscle, which serves to lengthen or flatten it, as the animal may require. The crystalline humor, which in quadrupeds is flattened, is in fishes nearly globular. The eyes of fish are usually thought to be immovable, but this does not appear to be the case: those of some species are known to turn in the sockets.

In fishes the *organ of hearing* is placed at the sides of the skull; but differing in this respect from that in quadrupeds and birds, it is entirely distinct and detached

from it. In some fishes, as those of the Ray kind, the organ of hearing is wholly surrounded by the parts containing the cavity of the skull: in others, as the Salmon and Cod, it is partly within the skull. In its structure this organ is by no means so complicated as in quadrupeds and other animals that live in the air. Some genera, as the Rays, have the external orifice very small, and placed upon the upper surface of the head; but in others there is no external opening whatever.

The *food* of these animals is extremely various. Insects, worms, or the spawn of other fish, sustain the smaller tribes; which, in their turn, are pursued by larger foes. Some feed on mud and aquatic plants, but by far the greater number subsist on animal food only, and they are so ravenous as often not to spare even those of their own kind. Innumerable shoals of some species pursue those of others through vast tracts of the ocean; from the vicinity of the pole sometimes even to the equator. In these conflicts, and in this scene of universal rapine, many species must have become extinct, had not the Creator accurately proportioned their means of escape, their production, and their numbers, to the extent and variety of the dangers to which they are exposed. The smaller species are consequently not only more numerous and prolific than the larger, but their instinct impels them to seek for food and protection near the shore, where, from the shallowness of the water, many of their foes are unable to pursue them.

Fishes are in general oviparous: some few, however, produce their offspring alive. The males have the *milt*, and the females the *roe*, but some individuals of the Cod and Sturgeon tribes are said to contain both. The spawn of the greater number is deposited in the sand or gravel: many of the fish, however, which reside in the ocean, attach their ova to sea-weeds. The fecundity of these tribes far surpasses that of any other race of animals. In the spawn of a single Cod upwards of nine millions of eggs have been ascertained, and nearly a million and a half have been taken from the interior of a Flounder.

The *longevity* of fish is far superior to that of other creatures; and there is reason to suppose that they are, in a great measure, exempted from disease. Instead of suffering from the rigidity of age, which is the cause of natural decay in land animals, their bodies continue to increase with fresh supplies; and, as the body grows, the conduits of life seem to furnish their stores in greater abundance. How long these animals continue to live, has not yet been ascertained. The age of man seems not equal to the life of the most minute species. In the royal ponds of Marli, in France, there are some particular fish which, it is said, have been preserved tame since the time of Francis the First, and which have been individually known to the persons who have succeeded to the charge of them ever since that period.

Fish, like land animals, are either solitary or gregarious. Some, as Trout, Salmon, &c., migrate to considerable distances in order to deposit their spawn. Of the sea-fish, the Cod, the Herring, and many others, assemble in immense shoals, and migrate in these shoals through vast tracts of the ocean.

In the Gmelinian edition of the Systema Naturæ, the Fishes are divided into six orders:

1. *Apodal;* with bony gills, and no ventral fins, as the Eels.
2. *Jugular;* with bony gills, and ventral fins before the pectoral ones, as the Cod and Haddock.
3. *Thoracic;* with bony gills and ventral fins placed directly under the thorax, as the Turbot, Sole, Perch, and Mackerel.
4. *Abdominal;* with bony gills, and ventral fins placed behind the thorax, as the Salmon, Pike, Herring, and Carp.
5. *Branchiostegous:* with gills destitute of bony rays, as the Pike-fish and Lump-fish.
6. *Chondropterygious;* with cartilaginous gills, as the Sturgeon, Shark, Skate, and Lamprey.

INSECTS.

The insect division of the animal world received its name from the individuals of which it is composed having a separation in the middle of their bodies, by which they are cut, as it were, into two parts. These parts are in general connected by a slender ligament or hollow thread.

Insects *breathe* through pores arranged along their sides;* and have a scaly or bony skin, and many feet. Most of them are furnished with wings. They are destitute of brain, nostrils, and eyelids. Not only the place of the liver, but of all the secretory glands, is, in them, supplied by long vessels that float in the abdomen. The mouth is in general situated under the head; and is furnished with transverse jaws, with lips, a kind of teeth, a tongue, and palate: it has also, in most instances, four or six palpi, or feelers. Insects have also movable antennæ, which generally proceed from the front part of the head, and are endowed with a very nice sense of feeling.

In a minute examination of this class by Professor Cuvier, neither a heart nor arteries have been detected; and this gentleman says that the whole organization of insects is such as we might have expected to find, if we had previously known that they were destitute of such organs. Their nutrition, therefore, seems to be carried on by absorption, as is the case with the polypes, and other zoophytes.†

Nearly all Insects (except Spiders, and a few others of the apterous tribe, which proceed nearly in a perfect state from the egg) undergo a METAMORPHOSIS, or change at three different periods of their existence.

The lives of these minute creatures, in their perfect state, are in general so short that the parents have seldom an opportunity of seeing their living offspring. Consequently, they are neither provided with milk, like viviparous animals, nor are they, like birds, impelled to sit upon their eggs in order to bring their offspring to perfection. In place of these, the all-directing Power has endowed each species with the astonishing faculty of being able to discover what substance is fitted to afford the food proper for its young; though such food is, for the most part, totally different from that which the parent itself could eat. Some of them attach their *eggs* to the bark, or insert them into the leaves of trees and other vegetable substances; others form nests, which they store with insects or caterpillars that will attain the exact state in which they may be proper food for their young ones, when they shall awaken into life; others bury their eggs in the bodies of other insects; and others adopt very surprising methods of conveying them into the body, and even into the internal viscera of larger animals. Some drop their eggs into the water, an element in which they would themselves soon be destroyed. In short, the variety of contrivances that are adopted by insects to ensure the subsistence of their offspring, are beyond enumeration.

From the eggs of all insects proceed what are called *larvæ*, grubs, or caterpillars. These consist of a long body, covered with a soft, tender skin, divided into segments or rings. The motions of many of the larvæ are performed on these rings only, either in the manner of serpents, or by resting alternately each segment of the body on the plane which supports it. Such is the motion of the larvæ of Flies, emphatically so called, and of Wasps and Bees. Sometimes the surfaces of the rings are covered with spines, stiff bristles, or hooks, this is the case in Gad-flies, Crane-flies, and some others. The bodies of the larvæ, in some orders of insects, have, toward the head, six feet, each formed of three small joints; the last of which is scaly, and terminates in a hook: this is usual in those of Beetles and Dragon-flies. The larvæ of Butterflies and Moths, besides six scaly articulated feet, have a variable number of other false feet, which are not jointed, but terminate in hooks disposed in circles

* The Crab and Lobster tribes form an exception to this rule, for they respire by means of gills.

† He excepts the Crabs and Lobsters, which he arranges in a class by themselves, and denominates Crustaceous animals.

and semi-circles. These hooks, which are attached to the skin by a kind of retractile tubercles, serve as cramps to assist their motion on other bodies. The larvæ of such insects as undergo only a semi-metamorphosis, as Locusts, Crickets, and Cockroaches, and those of insects that undergo no transformation, as the Spiders, Ticks, and Mites, do not differ, with respect to their feet, from the perfect insects. In this larva state many insects remain for months, others for a year, and some even for two or three years. They are, in general, extremely voracious, oftentimes devouring more than their own weight in the course of twenty-four hours.

As soon as all their parts become perfected, and they are prepared to appear under a new form, called a pupa or *chrysalis*,* most species of insects fix upon some convenient place, for the performance of this arduous operation. This is generally a place where they are not exposed to danger; for in their transformation, they have neither strength to resist, nor swiftness to avoid, the attack of an enemy. That Power which instructed the parents to deposit their eggs in a proper receptacle, directs the offspring to the most secure and appropriate situation for their future defenceless state. Some of them spin webs or cones, in which they enclose themselves; others undergo their change in decayed wood; and others conceal themselves beneath the surface of the earth. Preparatory to the transformation, they cease to take any food, and, for some days, continue in a state of inactivity. During this time the internal organs are gradually unfolding themselves. When the completion is at hand, many of them may be observed alternately to extend and contract their bodies, in order to disengage themselves from the caterpillar skin. The hinder parts are those first liberated: when this is done, the animals contract, and draw the skin up towards their head; and, by strong efforts, they soon afterward push it entirely off. In their chrysalid state they remain for some time, to all appearance inanimate; but this is only in appearance, for, on being taken into the hand, they will always be found to exhibit signs of life. It is singular that, in the changes of insects, the intestinal canal is frequently very different in the same individuals, as they pass through the three states.

As soon as the animal, within the shell of the chrysalis, has acquired strength sufficient to break the bonds that surround it, it exerts its powers, and appears to the world in a *perfect* state. For a little while it continues humid and weak; but, as the humidity evaporates, its wings and shell become hardened, and it soon afterward commits itself in safety to its new element.

Some writers have conjectured that the *antennæ* or horns of insects are their organs of hearing; for it is evident, from various experiments, that insects are possessed of this sense in a degree as exquisite as most other animals, although, from their minuteness, we perhaps may never discover by what means. The antennæ, however, seem little likely to answer the purpose of ears. These instruments, of apparently exquisite sensibility, appear adapted to very different purposes, but to purposes with which we may remain long unacquainted.

The *eyes* of insects are formed of a transparent crustaceous set of lenses, so hard as to require no coverings to protect them. These, like multiplying glasses, have innumerable surfaces, on every one of which objects are distinctly formed; so that, if a candle be held opposite to them, it appears multiplied almost to infinity on their surfaces. Other creatures are obliged to turn their eyes; but insects have always some or other of these lenses directed toward objects, from what quarter soever they may present themselves. All these minute hemispheres are real eyes, through which every thing appears topsy turvy.

M. Leeuwenhoek, with the aid of a microscope, used as a telescope, looked through the eye of a Dragon-fly, and viewed the steeple of a church, which was two hundred and ninety-nine feet high, and seven hundred and fifty feet from the place where he stood. He could plainly see the steeple, though not apparently larger than the point of a fine needle. He also viewed a house; and could discern the front, distinguish the doors and windows, and perceive whether the windows were open or shut. Mr. Hook computed that there were fourteen thousand of these lenses in the two eyes of a Drone; and M. Leeuwenhoek reckons twelve thousand five hundred and forty-four lenses in each eye of the Dragon-fly. The pictures of objects that are delineated on these, must be millions of times less than those formed on the

* The chrysalis is occasionally called Aurelia, Bean, or Cod.

human eye. Many insects still smaller have eyes, so contrived as to discern objects some thousands of times less than themselves; for such the minute particles on which they feed must certainly be.

With respect to the *wings* of insects, those of the two first orders of Linnæus have their wings defended by a pair of hard crustaceous cases called elytra. The three subsequent orders have four membranaceous wings, without elytra. All the insects of the sixth order have but two wings, and under each of these, at its base, there is a poise or balancer like a little knob. These poises are commonly little balls, each placed on the top of a slender stalk, and movable every way at pleasure. In some they stand alone, but in others, as in the Flesh-fly tribe, they have little covers or hollow membranaceous scales, each of which somewhat resembles a spoon without a handle: every time the insect strikes the air with its wings, a very quick motion may be perceived in the balancer; and in the Flesh-flies, when this moves, it strikes against the little scale, and thus assists in producing the well-known buzzing sound that is made by flies when on the wing. The use of the poises to an insect seems to be precisely the same as that of a long pole, loaded at each end with lead, to a rope-dancer: they render the body steady, and obviate all its unsteadiness in flight.

The structure of the *feet* of these diminutive creatures is truly admirable. Those insects that live altogether in water have their feet long, flat, and somewhat hairy at the edges, well adapted to aid their motions in that element. Such as have occasion to burrow into the earth have their legs broad, sharp-edged, and serrated. These that use their feet only in walking, have them long and cylindrical. Some have their feet furnished with sharp, hooked claws, and skinny palms, by which, from the pressure of the atmosphere upon them, they are enabled to walk on glass and other smooth surfaces, even with their backs downward. Others have somewhat like sponges that answer the same end; and the spider has each foot armed with a kind of comb, probably for the purpose of separating the six threads that issue from so many orifices of its body, and preventing them from tangling. In insects which have occasionally to pass over spaces by leaping, the thighs of the hind legs are peculiarly large and thick.

The *tongue* of insects is a taper and compact instrument, by which they suck their food. Some of them can contract or expand it; and others, as the Butterflies, roll it up under their head, somewhat like the spring of a watch. In many it is enclosed within a sheath; and in several, as the Flies, it is fleshy and tubular.

The *mouth* is generally placed somewhat underneath the front part of the head; but in a few of the tribes it is situated below the breast. Some insects have it furnished with a kind of forceps, for the purpose of seizing and cutting their prey; and in others it is pointed, to pierce animal or vegetable substances, and suck their juices. In several it is strongly ridged with jaws and teeth, to gnaw and scrape their food, carry burdens, perforate the earth, nay the hardest wood, and even stones, for the habitations and nests of their offspring. In a few the tongue is so short as to appear to us incapable of answering the purpose for which it is formed; and the Gadflies appear to have no mouth.

Near the mouth are situated the *palpi* or *feelers:* these are generally four, but sometimes six in number. They are a kind of thread-shaped articulated antennæ. Their situation, beneath and at the sides of the mouth, renders them, however, sufficiently distinct from the proper antennæ. Some writers consider them to be useful in holding food to the mouth, whilst the insects are eating.

Linnæus has divided the animals of this class into seven orders,* viz:

1. *Coleopterous insects* (derived from the Greek words κολεος a sheath, and πτερον a wing.) These are the *Beetles*, or such as have crustaceous elytra or shells, which shut together, and form a longitudinal suture down the back. Of this order are the Chafer tribes, and several others.

2. *Hemipterous insects* (from ἡμισυς half, and πτερον a wing,) have their upper wings half crustaceous, and half membranaceous, not divided by a longitudinal suture, but incumbent on or crossed over each other; as the Cockroach, Locust, &c.

3. *Lepidopterous insects* (from πελις a scale, and πτερον a wing,) are those having

* Coleoptera, Hemiptera, Lepidoptera, Neuroptera, Hymenoptera, Diptera, and Aptera.

four wings covered with fine scales apparently like powder or meal; as the Butterflies and Moths.

4. *Neuropterous insects* (from νευρον a nerve, and πτερον a wing,) have four membranaceous, transparent, naked wings, in which the membranes cross each other so as to appear like net-work. The tail has no sting, but is sometimes furnished with appendices like pincers, by which the males are distinguished. The common Dragon-fly is the best example that can be brought to illustrate this order; and the genus Phrygenea forms an exception with respect to the net-work appearance of the wings.

5. *Hymenopterous insects* (from ὑμην a membrane, and πτερον a wing.) The insects belonging to this order have generally four membranaceous naked wings: the neuters, however, in some of the genera, and in others the males or females, are destitute of wings. The wings do not so much resemble net-work as those of the last order. The tail, except in the male, is armed with a sting. The Bee, the Wasp, and the Ant are of this tribe.

6. *Dipterous insects* (from διπλοος double, and πτερον a wing,) are those which have only two wings, each furnished at its base with a poise or balancer. The common House-flies and the Gnat are familiar examples of this order.

7. *Apterous insects* (from α without, and πτερον a wing.) This order contains all such insects as are destitute of wings in both sexes; as the Spider, the Flea, and the Louse.

Worms.

Nearly all the species of this, the lowest class of animal being, have slow locomotive powers. Their bodies are soft, fleshy, and destitute of articulated members. Some of them have hard internal parts, and others have crustaceous coverings. Many of them have arterial and venous vessels, in which the blood undergoes a real circulation; but these are by no means common to the whole class. In some of them eyes and ears are very perceptible, while others seem to enjoy only the senses of taste and touch, which are never wanting. Many have no distinct head, and most of them are destitute of feet. The whole of these creatures are very tenacious of life. In most of them, such parts as have been destroyed will afterward be reproduced.

They are divided into five orders*:

1. *Intestinal Worms.* These are simple naked animals, without limbs, that live some of them within other animals, some in water, and a few in earth. The Ascarides, Tapeworms, Leeches, and Common Worms, are illustrations of this order.

2. *Molluscous Worms.* These are simple animals without shells, and furnished with tentacula or arms: most of them are inhabitants of the sea, and some of the species possess a phosphorescent quality. The Sea Anemones, Cuttle-fish, Medusæ, Star-fish, and Sea-urchins, belong to the Moluscæ.

3. *Testaceous Worms;* are Molluscæ covered with calcareous shells, which they carry about with them; as the Mussels, Cockles, Oysters, Snails, &c.

4. *Zoophytes;* appear to hold a rank between animals and vegetables, most of them taking root and growing up into stems and branches. Some of them are soft and naked, and others are covered with a large shell.

5. *Animalcules;* are extremely minute, destitute of tentacula or feelers, and generally invisible to the naked eye. They are chiefly found in infusions of animal and vegetable substances of various kinds.

* Intestina, Mollusca, Testacea, Zoophyta, and Infusoria, of Linnæus.

MAMMIFEROUS ANIMALS.

PRIMATES.

This is the first of the Linnæan orders of quadrupeds. The animals, except some species of Bats, have four parallel front teeth in each jaw. They have one canine tooth on each side in both jaws. The females have two pectoral mammæ or breasts. The fore feet resemble hands, and have fingers, for the most part, furnished with flattened oval nails.

OF APES IN GENERAL.

INDEPENDENTLY of the general form of these animals, and of their external and internal organization, which in many respects present a striking and humiliating resemblance to those of men, their playfulness, their gesticulations and grimace, have, in all ages, attracted the notice of mankind. Some naturalists have asserted, that they are capable of reasoning and reflection, and that they are guided by instincts much superior to those of the brute creation in general. This, however, is certainly not the case; for they are known to be inferior in sagacity to numerous other quadrupeds.

Their limbs are peculiarly strong; and, in all their operations and manœuvres, their agility is most astonishing. They have great delight in breaking, tearing to pieces, or stealing whatever lies in their way. If any thing irritates or offends them, they indicate their rage by chattering with their teeth. Many of the species, when they are beaten, will sigh, groan, and weep, like children; but most of them, on such occasions, utter dreadful shrieks of distress. They, however, frequently make such ridiculous grimaces, place themselves in such strange and whimsical attitudes, and, in other respects, conduct themselves so singularly, that even the most serious persons must, sometimes, be amused with them.

For greater facility of description, the animals of this extensive tribe are usually arranged in three divisions of Apes, Baboons, and Monkeys.

Apes are destitute of tails; they walk upright; their legs are furnished with calves; and their hands and feet nearly resemble those of men. In their manners they are, for the most part, mild and gentle, and they imitate human actions more readily, and are susceptible of greater attainments, than any others of their tribe. *Baboons* have short tails; they generally walk on all fours, and seldom go upright, except when constrained so to do in a state of servitude. Some of the baboons are as tall as men, have long faces, sunken eyes, and are otherwise extremely disgusting. In their dispositions they are usually so sullen and ferocious as to be incapable of any education

whatever. *Monkeys* have tails in general longer than their bodies. They are by far the most lively and active of the whole race. They are greatly addicted to thieving, and scarcely ever imitate human actions without a mischievous intention. One division of the Monkeys, which are denominated, by the French writers, *Sapajous*, have their tails extremely long, and so formed that they can coil them round any object, so as to answer nearly all the purposes of an additional hand. By means of these they are able even to swing themselves backward and forward amongst the branches of trees. The animals of this division are inhabitants almost exclusively of the New Continent.

Monkeys usually live in much more extensive troops than either Apes or Baboons. Some naturalists have been credulous enough to believe that they form a sort of republic, in which a great degree of subordination is kept up; that they always travel in regular order, conducted by chiefs, the strongest and most experienced animals of their troop; and that, on these occasions, some of the largest Monkeys are likewise placed in the rear, the sound of whose voice immediately silences those of any of the others which happen to be too noisy. The negroes of Africa believe that these animals are a vagabond race of men, who are too indolent to construct habitations or to cultivate the ground.

The dexterity of Monkeys is such, that, although burdened by their offspring clinging to their backs, they are able to leap from one tree to another, if the distance be not very great, and to secure their hold among the branches with the greatest certainty. When they perceive any person taking aim at them, either with a gun or bow, they cry out and grind their teeth, and this sometimes in the most horrible manner imaginable. If a Monkey be shot, and fall to the ground, all the rest set up a dismal and tremendous howl; and if one of these animals be wounded, and do not fall, it frequently happens that his companions will seize and carry him off far beyond the reach of their enemy.

In many parts of India, Apes and Monkeys are made objects of worship by the natives, and temples of the greatest magnificience are erected in honour of them. Their numbers are almost infinite. They frequently come in troops into the cities, and enter the houses at all times with perfect freedom. In Calicut, however, the inhabitants contrive to keep them out of their dwellings; but to effect this they are compelled to have all their windows latticed. In Amadabad, the capital of Guzerat, there are three hospitals for animals, where lame and sick Monkeys, and even those which (without being diseased) choose to dwell there, are fed and cherished. Twice every week the monkeys of the neighborhood assemble spontaneously in the streets of the city. They then mount upon the houses, each of which has a small terrace or flat roof, where they lie during the great heats. On these days the inhabitants always carefully deposit on the terraces, rice, millet, or fruit; and if they be accidentally prevented from doing this, the disappointed animals become so furious, that they break the tiles, and commit various other outrages.

1. APES.

THE ORAN OTAN, AND CHIMPANZEE.

DESCRIPTION. The Oran Otan, when full grown, is from five to six feet in height. Its color is a ferruginous or reddish brown; and the hair of the fore-arm is reversed. The face is naked, and bears some resemblance to that of a man; but the facial angle is considerably more acute, and consequently the forehead is much more oblique than in any human subject. The chin also has no elevation.

SYNONYMS. Simia Satyrus. *Linnæus.*—Great Ape. *Penn.*—Man of the Woods. *Edwards.*—Le Jocko. *Buffon. Audebert.*—Jocko, in Congo.—Sinsin, in China.—Oran Otan, in the Indian Islands. This name signifies Wild Man.

DESCRIPTION. The difference betwixt the Chimpanzee and Oran Otan is chiefly in size and color. The Chimpanzee seldom measures more than from two feet and a half to three feet in height; and its hair is dark brown or blackish.

SYNONYMS. Simia Troglodytes. *Linn.*—Le Pongo. *Buffon. Audebert*—Baris, in Guinea.—Chimpanzee or Quimpezee, by the English who frequent the coast of Angola.

ORAN OTAN.

IN its native state, the Oran Otan is an inhabitant of Borneo, China, the East Indies, and Africa; and the Chimpanzee, of Angola, Sierra Leona, and some parts of Asia. Both the species are exceedingly wild, and are found only in the most retired places. They feed on fruit, vegetables, and roots of various kinds; and such as inhabit the forests that are adjacent to the seashore, live occasionally on crabs and shell-fish. Their resting-places are in trees, where they are perfectly secure from the attack of all predacious creatures except Serpents.

Andrew Battel, a Portuguese traveller, who, two centuries ago, resided in Angola nearly eighteen years, informs us that these animals were very common in the woods of that country. Their bodies, he says, were covered, but not very thickly, with a dun-colored hair; and their legs were without calves. They always walked upright, and generally, when on the ground, carried their hands clasped on the hinder part of their neck. They slept in the trees, amongst which they formed a kind of arbor, to shelter themselves from the weather; and their food consisted principally of fruit and nuts. Battel says, that the inhabitants, when they travelled in the woods, were accustomed to make fires around the places where they slept, for the purpose of keeping at a distance various species of voracious animals; and that, at these fires, the Oran Otans would assemble in the mornings, and would sit by them till the last of the embers were expired.

HUNTING THE ORAN OTAN.

He describes these animals to be so powerful, that ten men would not have strength enough to hold one of them; and, consequently, the inhabitants could never catch the old ones alive. He states, what perhaps few persons will be inclined to believe, that when any of them die, the rest cover up the bodies with great branches of trees.

Among the woods on the banks of the river Gambia, the Oran Otans collect in troops of three or four thousand, and are excessively impudent and mischievous. Jobson, who gives the account, says, that whenever his party, in sailing along the river, passed the stations of these animals, they mounted the trees and gazed upon the men. Sometimes they would chatter and make a loud noise, at the same time shaking the trees with their hands, which they did with vast force and violence. At night, when the vessel was at anchor, the animals often took their stations on the rocks and heights above. When the men were on shore and met any of them, the old ones generally came forward and seemed to grin in their faces; but they always fled when an attack was made. One of them was killed from the boat, with a gun, but before the boat could be got ashore, the others had carried away the dead body.

M. Le Compte informs us that, in the island of Borneo, these animals are hunted by persons of quality, somewhat in the same manner as stags are in Europe; and that, in his time, this kind of hunting was a favorite diversion of the king.

In a wild state the Oran Otans are said to be so savage and ferocious, that if a Negro be unfortunate enough to wander in the woods, and be discovered by them, they generally attack and kill him. With a piece of wood in their hands, or with their fists only, they are able to drive off even Elephants. They have been known to throw stones at persons who have offended them. Bosman informs us, that, behind the English fort at Wimba, on the cost of Guinea, several of these Apes attacked two of the company's slaves, overpowered them, and would have poked out their eyes with sticks, had not a party of Negroes happened to come up and rescue them.

It is asserted that, during the breeding season, the males relinquish their habitations to the females and their offspring; and that, as soon as the young ones have attained a sufficient degree of strength to venture abroad, they hang on the breast of the mother, with their arms clasped fast about her. And it is believed that, whenever the females are killed, their young ones will always suffer themselves to be caught.

Gemelli Carreri relates a circumstance concerning these animals, which, if we could believe it correct, would almost induce us to suppose that they were not altogether destitute of reason. He tells us, that when the fruits on the mountains are exhausted, they frequently descend to the sea-coast, where they feed on various species of shell-fish, and in particular on a large species of oyster, which commonly lies open on the shore. "Fearful, however, of putting in their paws, lest the oyster should close and crush them, (he says,) they insert a stone within the shell: this prevents it from closing, and they then drag out their prey and devour it at leisure."

The following are accounts of the Oran Otan and Chimpanzee, in a state of captivity and domestication.

M. de la Brosse, a French navigator, who was in Angola in the year 1718, and who purchased from a Negro, two Oran Otans, remarks that these animals would sit at table like men, and eat there every kind of food, without distinction; that they would use a knife, a fork, or spoon, to cut or lay hold of what was put on their plate; and that they drank wine and other liquors. At table, when they wanted any thing, they easily made themselves understood to the cabin-boy; and when the boy refused to answer their demands, they sometimes became enraged, caught him by the arm, bit, and threw him down. The male was seized with sickness, and he made the people attend him as if he had been a human being. He was even bled twice in the right arm, and, whenever afterwards he found himself in the same condition, he held out his arm to be bled, as if he knew that he had formerly received benefit from that operation.

THE ORAN OTAN.

Two Chimpanzees were sent from the forests of the Carnatic, by a coasting vessel, as a present to the governor of Bombay. They, like the rest of the species, had many human actions, and seemed by their melancholy to have a rational sense of their captivity. They were scarcely two feet high, but walked erect, and had nearly the human form. The female was taken ill during the voyage, and died; and the male, exhibiting every demonstration of grief, refused to eat, and lived only two days afterwards.

When M. Le Guat was in Java, he saw a tall female Ape, which, no doubt, belonged to the present species. Her face, he says, had a distant resemblance to some of the grotesque female faces which he had seen among the Hottentots at the Cape of Good Hope. She made her bed very neatly every day, lay upon her side, and covered herself with the clothes. She would often bind up her head with a hand-

kerchief, and it was amusing to see her thus hooded in bed. It was intended to bring her into Europe for the purpose of exhibition, but she died on board the ship in the latitude of the Cape.

In the year 1759, M. Pallavicini, who held an official situation at Batavia, had in his house two Oran Otans, a male and female, which were extremely mild and gentle. They were nearly of human stature, and imitated very closely the actions of men, particularly with their hands and arms. In some respects they appeared to have a degree of bashfulness and modesty which is not observable even in savage tribes of the human race; but this, probably, was a trick that they had been taught. If, for instance, the female was attentively looked at by any person, she would throw herself into the arms of the male, and hide her face in his bosom. Their voice was a kind of cry, resembling that of most other Apes and Monkeys.

An individual of the Oran Otan species, or a variety nearly allied to it, was caught, when young, in the interior of Guinea, and carried thence to Surinam. Professor Allemand had received many vague and unsatisfactory particulars respecting this animal. These, however, were, on the whole, so interesting, that he was induced to write to M. May, a captain in the Dutch naval service, stationed at Surinam, for the purpose of obtaining an authentic account of it. M. May informed him, that, when he was with his vessel, on the coast of Guinea, one of the sailors brought on board a small tailless Ape, about six months old, which had been caught in the kingdom of Benin. He soon afterwards sailed for Surinam; and this animal arrived in perfect health at Paramaribo, where the Oran Otan above-mentioned was then living.

He was greatly surprised to find that the two animals were of the same kind, and that there was no other difference betwixt them than that of their size. This, however, was considerable, the Oran Otan being about five feet and a half in height, whilst his animal scarcely exceeded the height of twelve or fourteen inches.

The old Oran Otan could walk equally well on four and on two feet: it was very strong and powerful. M. May says, that he has seen it take its master (a stout man) by the middle of the body, raise him with the greatest ease from the ground, and then throw him to the distance of two or three paces. M. May was assured, that this animal one day seized a soldier, who happened carelessly to pass near the tree to which he was chained, and that, if his master had not been present, he would have actually carried the man into the tree.

At the time when M. May first saw the animal, it had been in Surinam twenty-one years, and yet it did not appear to have attained its full growth. In confirmation of this, he was informed, that in the preceding year it had increased considerably in height. The captain of an English vessel offered the owner of this animal one hundred guineas for it: but this sum, great as it was, he refused; and two days afterwards the animal died.

Neither the Oran Otan nor Chimpanzee have been often brought alive into Europe. An Oran Otan was exhibited in London in the years 1818 and 1819; a Chimpanzee in the year 1698, another in 1738, and a third in 1819; and, in the course of the last century, three or

CHIMPANZEE.

four have, at different times, been brought into France.

In confinement, both the Oran Otan and Chimpanzee are mild, gentle, and, for the most part, harmless animals. They are perfectly devoid of that disgusting ferocity so conspicuous in some of the larger Baboons and Monkeys; and, in general, are so docile, that they may be taught to perform, with dexterity, a great variety of entertaining actions.

The Chimpanzee that was in England in the year 1698, had been caught in Angola, and far up the country. It was a male, and, at the time it was taken, had a female in company. This animal was soon rendered tame, and became the most gentle creature imaginable. Those persons whom he knew on board the vessel which brought him over, he would embrace with the greatest tenderness. And, although there were several Monkeys in the ship, yet he would on no occasion associate with them. In many of his actions he displayed considerable sagacity. A suit of clothes was made for him, and in the wearing of them he took great delight. Such part of this dress as the animal could not put on by himself, he would bring in his paws to some one of the ship's company for assistance. At night he would lie down in bed, precisely in the same manner as a human being; would place his head on the pillow, and pull up the bed-clothes, in order to keep himself warm. This animal died a short time after he came to London, and his body was purchased for dissection by Dr. Tyson.

A female Oran Otan, from the island of Borneo, was brought alive into Holland, in the year 1776, and lodged in the Menagerie of the Prince of Orange. She was extremely gentle, and exhibited no symptoms whatever of fierceness or malignity. She had a somewhat melancholy appearance, yet loved to be in company, and particularly with those persons to whose care she was entrusted. Oftentimes, when they retired, she would throw herself on the ground, as if in despair, uttering the most doleful cries, and tearing in pieces any article of linen that happened to be within her reach. Her keeper having sometimes sat near her on the ground, she would frequently take the hay of her bed, arrange it by her side, and, with the greatest anxiety and affection, invite him to sit down.

This animal usually walked on all fours, like other Apes; but she could also walk erect. In an erect posture, however, her feet were not usually extended like those of man, but the toes were curved beneath, in such manner that she rested chiefly on the exterior sides of the feet.

One morning she contrived to escape from her chain; and, not long afterwards, was seen to ascend, with wonderful agility, the beams and oblique rafters of the building. With some trouble she was taken; but the efforts of four men were found necessary to secure her. Two of these siezed her by the legs, and a third by the head, whilst the other fastened the collar round her body. During the time she was at liberty she had, amongst other pranks, taken the cork from a bottle

of Malaga wine: she drank the wine to the last drop, and then set the bottle again in its place.

She would eat of almost every kind of food that was given to her; but she lived chiefly on bread, roots, and fruit. Carrots and strawberries she was peculiarly fond of, as well as of several kinds of aromatic plants, and of the leaves and root of parsley. She also ate meat, both boiled and roasted, as well as fish; and was fond of eggs, the shells of which she broke with her teeth, and then emptied, by sucking out the contents. When strawberries were given to her on a plate, it was amusing to see her take them up, one by one, with a fork, and put them into her mouth, holding, at the same time, the plate in the other hand. Her usual drink was water, but she would also eagerly drink all sorts of wine, particularly Malaga. After drinking, she wiped her lips; and after eating, if presented with a toothpick, she would use it in a proper manner. Whilst she was on shipboard, she ran freely about the vessel, playing with the sailors, and would go, like them, into the kitchen for her mess. When, at the approach of night, she was about to lie down, she would prepare the bed on which she slept, by shaking well the hay, and putting it in proper order; and, lastly, she would cover herself up warm with the quilt. One day, seeing the padlock of her chain opened with a key, and shut again, she seized a little bit of stick, and put it into the keyhole, turning it about in all directions, and examining to ascertain whether the padlock would not open.

On the first arrival of this animal in Holland, she was so young as to be only two feet and a half high, and she had but little hair on any parts of the body except the back and arms; but, at the approach of winter, she became thickly covered, and the hair on the back was at least six inches in length. After having been seven months in Holland, she died; and her skin was deposited in the Museum of the Prince of Orange.

This animal was seen and described by M. de Buffon. He informs us that she always walked upright, even when carrying things of great weight; that her air was melancholy, her gait grave, her movements measured, and, that in every respect of disposition, she was very different from other apes. She would present her hand to conduct the people who came to visit her, and would walk as gravely along with them as if she had formed a part of the company. She would frequently sit with persons at dinner: would unfold her towel, wipe her lips, use a spoon or fork to carry the provisions to her mouth, pour her liquor into a glass, and make it touch that of a person who drank at the same time. If invited to take tea, she would bring a cup and saucer, place them on the table, put in sugar, pour out the tea, and allow it to cool before she drank it. All these actions she performed without any other instigation than the signs or verbal orders of her master, and often even of her own accord.

She exhibited no symptoms whatever of ill-nature, and would voluntarily hold out her paw to any person who was inclined to shake hands with her. The food she was chiefly fond of was bread, fruit, carrots, and roots of various kinds; and these she would eat without that appear-

ance of voracity which is common to most animals of her tribe. She would take in one hand a vessel containing water, and carrying it to her mouth, in the same manner as a child or a man, would tranquilly drink the contents.

Her motions were slow and languid, and she never indicated any great degree of vivacity. She would frequently play with a blanket, which served her for a bed; and sometimes she seemed pleased at tearing it. The usual attitude of this animal was a sitting posture, with her knees and thighs elevated: and even when she walked, it was somewhat in the same posture, with her haunches but little raised from the ground. M. Allemand informs us, that she was seldom seen to stand perfectly upright, except when she wanted to seize something that she could not otherwise reach. From these circumstances, he was induced to believe, that Oran Otans, in a wild state, do not, like men, walk in an upright posture; but that, in the manner of other quadrupeds, they go on all fours. He considers that the hand-like conformation of their fore feet is given to them for the purpose of enabling them to climb. This animal would often amuse herself, in the room where she was kept, by climbing upon the bars of the windows, as high as the length of her chain would allow.

Of an Oran Otan which M. le Compte saw in the Straits of Malacca, he says, that all its actions were so imitative of those of mankind, and its passions were so expressive and lively, that a dumb person could scarcely have rendered himself better understood. This animal was extremely gentle, and exhibited great affection towards every person from whom it received any attentions. One thing was very remarkable, that, like a child, it would frequently make a stamping noise with its feet; this arose either from joy or anger, when it had received or was refused any kind of food to which it was partial.

Its agility was almost incredible. With the greatest ease and security it would run about amongst the rigging of the vessel, would vault about from rope to rope, and play a thousand pranks, as if it were delighted by exhibiting its feats of dexterity for the diversion of the company. Sometimes, suspended by one arm, it would poise itself, and then suddenly turn round upon a rope, with nearly as much quickness as a wheel or a sling. Sometimes it would slide down one of the ropes, and would again ascend with astonishing agility. There was no posture which this animal could not imitate, nor any motion that it could not perform. It has even sometimes been known to fling itself downward from one rope to another, though at a distance of more than thirty feet.

A young Oran Otan that had been caught in the interior of Borneo, was taken thence to Java; and, in 1817, was brought to England, in one of the ships attached to the expedition which had sailed with Lord Amherst to China. He then measured only about two feet seven inches in length, from his heel to the crown of his head.

This animal was utterly incapable of walking in an upright posture. His progressive motion, on a flat surface, was accomplished by placing his bent fists upon the ground and drawing his body between his arms. In sitting, he turned his legs under him. After his ar-

rival in Java he was allowed to be at liberty, till within a day or two of his being put on board of the ship to be conveyed to England; and he made no attempt whatever to escape: but he became violent when put into a large bamboo cage, for the purpose of being conveyed from the island. As soon as he felt himself in confinement, he seized the rails of the cage in his hands, and shaking them violently, endeavored to break them in pieces; nor did he entirely cease till he had broken through it and made his escape. On board the ship, an attempt was made to secure him by a chain tied to a strong staple; he, however, instantly unfastened it, and ran off with the chain dragging behind. It embarrassed him by its length, on which he coiled it up once or twice, and threw it over his shoulder; but when he found it would not remain on his shoulder, he took it into his mouth. After several useless attemps had been made to secure him more effectually, he was allowed to wander freely about the ship.

He soon became familiar with the sailors, and surpassed them in agility. They often chased him about the rigging; and he gave them frequent opportunities of witnessing his adroitness in effecting an escape. At first starting he would endeavour to outstrip his pursuers by mere speed: but when he was much pressed, he would elude them by seizing any loose rope that was near him, and swinging out of their reach. At other times he would patiently wait on the shrouds, or at the mast-head; till his pursuers almost touched him, and then would suddenly lower himself to the deck by any rope that was near him; or he would bound along the main-stay, from one mast to the other, swinging by his hands, and moving them one over the other. When in a playful humor he would often swing within arm's length of his pursuer, and, having struck him with his hand, would throw himself from him.

He usually slept, wrapt in a sail, at the mast-head. In making his bed, he carefully removed everything out of his way that might render the surface he intended to lie on uneven. And, as soon as he had satisfied himself with this part of the arrangement, he would spread out the sail, and lying down upon his back, would draw it over his body. If all the sails happened to be set, the animal would hunt about for some other covering, and would steal one of the sailor's jackets or shirts, or would empty a hammock of its blankets, and carry them away to sleep upon.

When off the Cape of Good Hope, he suffered much inconvenience from the cool temperature of the atmosphere; and would often descend from the mast shivering with cold. Then, runing up to any one of the persons to whom he was chiefly attached, he would climb into their arms, and clasping them closely, would derive warmth from their persons, and would scream violently if any attempt was made to remove him.

In Java his food was chiefly fruit; but he also sucked eggs with voracity, and often employed himself in seeking them. He there slept in a large tamarind-tree, in which he formed a kind of bed by intertwining the small branches of the tree, and covering them with leaves. During the day, he would lie with his head projecting beyond the

nest, watching those who passed beneath; and, when he saw any one with fruit, would immediately descend, to obtain a share of it.

On board the ship his food was of no definite kind. He ate readily all kinds of meat, especially raw meat; was very fond of bread, but he always preferred fruit. His beverage in Java was water; but, in the ship, it was as diversified as his food. He preferred coffee and tea, but would readily take wine, beer, or spirits.

In the attempts of this animal to obtain food, he afforded many opportunities of judging respecting his sagacity and disposition. He was always impatient to seize it when held out to him; became passionate if it was not soon given up, and would chase a person all over the ship to obtain it. The animal had been given to Mr. Abel, the naturalist attached to the expedition; and this gentleman seldom went on the deck without sweetmeats or fruit in his pockets; and he could never escape the vigilant eye of the animal. Sometimes Mr. Abel endeavoured to evade him, by ascending to the mast-head, but he was always either overtaken or intercepted in his progress. When the Oran Otan came up to Mr. Abel, on the shrouds, he would secure himself by one foot to the rattling, and confine the legs of this gentleman with the other and with one of his hands, whilst, with the remaining hand, he rifled his pockets. If he found it impossible to overtake Mr. Abel, he would climb to a considerable height on the loose rigging, and then drop suddenly upon him. Or if, perceiving his intention, this gentleman attempted to descend, the animal would slide down a rope and meet him at the bottom of the shrouds.

He neither practised the grimaces and antics of other Monkeys, nor possessed their perpetual proneness to mischief. Mildness and gravity, approaching to melancholy, seemed to be the characteristic of his disposition. When he first came among strangers; he would sit for hours with his hand upon his head, looking pensively at all around him; and, when much incommoded by their examination, he would hide himself beneath any covering that was at hand. He soon became attached to those persons who kindly used him, would sit by their side, and run to them for protection. The boatswain of the Alceste taught him to eat with a spoon; and the animal might often be seen at the door of the boatswain's cabin, enjoying his coffee, quite unembarrassed by those who observed him.

The favorite amusement of this Oran Otan, in Java, was to swing from the branches of trees, to pass from one tree to another, and to climb over the roofs of houses. On board the ship, he was chiefly delighted to hang with his arms from the ropes, and to play with the boys. He would entice them into play by striking them with his hand as they passed, and then

ORAN OTAN WASHING HIS HANDS.

bounding from them, but allowing them to overtake him and engage in a mock scuffle, in which he used his hands, feet, and mouth.

But though, for the most part extremely gentle, he could be excited to violent rage: this he expressed by opening his mouth, showing his teeth, seizing and biting those who were near him.

When brought to London, in the month of August, 1817, this animal was deposited, for exhibition, in the menagerie at Exeter 'Change. He was there found to be extremely tame and gentle, and was frequently allowed to take his food and sit by the fire, in the keeper's apartment; and he was taught two feats which he had not practised on board the ship: these were to walk upright, or rather to walk on his feet unsupported by his hands; the other was to kiss the keeper. With regard however, to the former of these accomplishments, it may be remarked, that a well-trained dancing-dog would have far surpassed him; and to the latter, that he merely pressed his projecting lips against the face of the keeper.

This animal increased very much in all his dimensions; and, after having lived through two winters, in London, he died on the 1st of April, 1819. The immediate cause of his death was the changing of his teeth, from which it was ascertained that he must have been extremely young when first caught. His skin and skeleton are now deposited in the museum of the College of Surgeons in London.

In the month of July, 1819, a Chimpanzee, from the Gold Coast of Africa, was placed in the menagerie at Exeter 'Change. This animal was of small size and black color, and extremely mild and tractable; but, having died not long after he was brought there, little is known respecting his habits and manners.

Père Carbasson brought up an Oran Otan, which became so fond of him, that wherever he went, it always seemed desirous of accompanying him: whenever, therefore, he had to perform the service of his Church, he was under the necessity of shutting it up in a room. Once, however, the animal escaped, and followed the father to the church. There, silently mounting the sounding-board above the pulpit, he lay perfectly still till the sermon commenced. He then crept to the edge, and, overlooking the preacher, imitated all his gestures in so grotesque a manner, that the whole congregation were unavoidably urged to laugh. The father, surprised and confounded at this ill-timed levity, severely rebuked his audience for their inattention. The reproof failed in its effect; the congregation still laughed, and the preacher in the warmth of his zeal, redoubled his vociferations and his actions: these the Ape imitated so exactly, that the congregation could no longer restrain themselves, but burst into a loud and continued laughter. A friend of the preacher at length stepped up to him, and pointed out the cause of this improper conduct; and such was the arch demeanor of the animal, that it was with the utmost difficulty the father could command the muscles of his countenance, and keep himself apparently serious, while he ordered the servants of the Church to take him away.

THE BARBARY APE.

DESCRIPTION. The face of this Ape is shaped somewhat like that of a Dog; and its cheeks are furnished with pouches. When the animal stands upright, its height is usually betwixt three and four feet. The color of the back is a greenish brown, and of the belly, pale yellow.

SYNONYMS. Simia inuus. *Linn.*—Le Magot. *Buffon. Audebert.*—Momenet. *Johnston.*—Yellow Ape. *Du Halde.*—Barbary Ape. *Pennant. Shaw.—Shaw's Gen. Zool. Pl.* 7.

BARBARY APE.

The forests of India, Arabia, and Africa, abound in animals of this species; and they are so common in Barbary, that the trees are sometimes nearly covered with them. A few are found about the rock of Gibraltar.

They subsist on vegetables and fruit; and in their manners are equally fierce and mischievous. We are informed that sometimes they assemble in the open plains of India, in vast troops, and that if they see any of the women going to market, they attack them and take away their provisions. Tavernier, apparently alluding to this species, says, that some of the inhabitants of India have an odd mode of amusing themselves at their expense. They place five or six baskets of rice, forty or fifty yards asunder, in an open ground near their retreat, and by every basket put a number of stout cudgels each about two feet long; they then retire to some hiding-place, not far distant, to wait the event. When the Apes observe that there are no persons near the baskets, they descend in great numbers from the trees, and run towards them. They grin at each for some time before they dare approach; they advance, then retreat, and seem much disinclined to encounter each other. At length the females, which are more courageous than the males, venture to approach the baskets, and as they thrust in their heads to eat, the males on one side advance to prevent them. A sharp contest now commences. The different combatants seize the cudgels and beat each other, till the weakest party is driven into the woods. The victors, M. Tavernier tells us, then fall-to in peace, and devour the reward of their labor.

He states that as he was travelling in the East Indies, in company with the English president, several large apes were observed upon the trees around him. The president was so much amused, that he ordered his carriage to stop, and desired M. Tavernier to shoot one of them. The attendants, who were principally natives and well acquainted with the manners of these animals, entreated of him to desist, least those that escaped might do them some injury in revenge for the death of a companion. Being, however, still requested, he killed one of them, In an instant all the remaining Apes, to the number of sixty or up

BARBARY APE.

wards, descended in fury, and as many as could, leaped upon the president's coach, where they would soon have strangled him, had not the blinds been immediately closed, and the number of attendants so great as to drive them off. They however continued to run after the servants for at least three miles from the place where their companion was slain.

This species of Ape agrees well with our climate, and is very common in exhibitions in this country. It walks on four in preference to two legs; and uses the same grimaces to express both anger and appetite. Its movements are brisk, its manners gross; and when agitated by passion, it exhibits and grinds its teeth. Notwithstanding their ferocious and unaccommodating disposition, these animals are sometimes taught to dance, to make gesticulations in cadence, and allow themselves peaceably to be clothed.

M. de Buffon had a Barbary Ape for several years. In summer, he says, it delighted to be in the open air; and, even in winter, it was frequently kept in a room without fire. Though long in confinement, it did not become at all civilized. Whenever food was given to it, it filled its pouches; and when about to sleep, loved to perch on an iron or wooden bar.

THE PIGMY APE.

DESCRIPTION. The Pigmy Ape, when on its hind legs, is about two feet high. Its face is almost naked, and is somewhat long and wrinkled. The canine-teeth are short, and, as well as the ears, very much resemble those of men. The eyes are round, reddish, and have great vivacity. The posteriors are naked and callous; and, in place of a tail, there is a small prominent piece of skin, five or six lines in length. The general colors of the body are olive-brown above, and yellowish on the belly; and, in many individuals, part of the breast and belly have a large, dark-colored mark.

SYNONYMS. Simia sylvanus. *Linn.*—Pitheque *Buffon.*—Pigmy Ape. *Pennant.*—*Shaw's Gen. Zool. Pl.* 8.

PIGMY APE.

According to the account given by M. Desfontaines, these Apes live in great troops; and at Sara, in ancient Numidia, are numerous beyond description. Their food consists chiefly of pine-apples, nuts, Indian figs, melons, and various kinds of fruit and vegetables. Like many others of their tribe, they often go in a body to attack gardens or plantations; and, notwithstanding all the care that is taken to prevent their depredations, they are frequently successful. Previously to the

commencement of their plundering, they always send one of their party to the top of some adjacent rock or tree, to give notice to the rest of any appearance of interruption. This animal remains on watch during the whole business; and, if he perceive any person approach, or hear any alarming noise, he gives a loud shriek, on which the whole troop immediately run off, and climb the trees, carrying away with them whatever they may happen to have seized. If the alarm continue, and the country be well wooded, they pursue their route, leaping from tree to tree, all the way to the mountains. In this procedure the females are often burdened by their young ones clinging round their necks and backs; and yet, in spite of such an incumbrance, they are able to leap to vast distances. The injury that these animals do to the fruits and corn is incalculable. They gather them into heaps, and tear and throw them on the ground in such quantities, that what they eat or carry off is generally trifling compared with the whole quantity which they destroy.

The females seldom produce more than one young one at a birth. This, almost as soon as it comes into the world, clings to the back of its dam, and so closely embraces her neck with its arms, as not to be shaken off by any of her usual exertions. The Pigmy Apes have not hitherto been known to breed in a domestic state, even when kept in large enclosed court-yards, and in their native country.

The natural disposition of these creatures is in general so mild, that, in most cases, they may be tamed without difficulty. In their general manners they are gay and frolicsome, and they always chatter when pleased; but when irritated, they use threatening gestures and will generally bite, with great fury, such persons as injure or insult them. To those, on the contrary, from whom they are accustomed to receive attentions, they become greatly attached: they will exhibit toward them strong proofs of fidelity, and will even follow them about from place to place without attempting to escape. When these Apes are alarmed, their fear is always plainly depicted in the countenance; for this changes color somewhat like that of a man. They are in general a dirty, filthy species, and leave an unpleasant smell wherever they go. With the most mischievous propensity, they break and destroy nearly everything that lies in their way; and they are only to be restrained from this by severe chastisement. They use both their hands and feet with singular address in laying hold of objects. M. Desfontaines informs us that he has often seen these animals throw off with the greatest ease, chains by which they appeared to be strongly secured.

In the supplementary volumes of M. de Buffon, we are informed that this writer kept a male Pigmy Ape for more than a year. He says that its usual mode of walking was on four feet; and that it could seldom be induced to walk upright for more than a few minutes at a time. It was an active animal, and generally in motion. Its greatest delight seemed to be in leaping, climbing, and catching at every thing within its reach. Whenever it was left alone it exhibited symptoms of discontent, by exerting a kind of mournful cry. In its

disposition it was so mild, that it was rarely known to bite with severity any one who teased or offended it.

The Pigmy Apes generally sleep in caverns in the woods; and we are told that the natives of the country which they inhabit sometimes adopt a singular mode of taking them, for the purpose of fattening them as food. They place, near their haunts, vessels containing strong liquors; and the animals, assembling to enjoy so unexpected a repast, become intoxicated, fall asleep together, and in this predicament are easily secured.

II. BABOONS.

THE COMMON OR MOTTLED BABOON.

DESCRIPTION. This animal, which is found in the hottest parts of Africa, is frequently three or four feet in height, and, in its upper parts, excessively strong and muscular. Toward the middle of the body it is, like all the Baboons, very slender. Its general color is a grayish brown; and the face, which is long, is of a tawny flesh color. It has pouches in its cheeks. The tail is very short, and the posteriors are bare, and callous. *Shaw.*

SYNONYMS. Simia Sphinx. *Linnæus.*—Mottled Baboon. *Pennant.*—Le Papion. *Buffon. Audebert.*—Common Baboon. *Shaw.*—Baboon. *Bewick.—Shaw's Gen. Zool. Pl.* 16.—*Bew. Quad. p.* 254.

COMMON BABOON.

THE disposition of these Baboons is exceedingly ferocious, and their appearance is at once both grotesque and formidable. When confined in a cage they will sometimes lay hold of the bars, and shake them so powerfully as to make all the spectators tremble; and, in their native forests, they are oftentimes dangerous enemies.

In Siam they frequently sally forth in astonishing multitudes, to attack the villages, during the time the laborers are occupied in the rice harvest; and they plunder the habitations of whatever provisions they can lay their paws on. Fruit, corn, and roots form their principal food; and, in obtaining these, they often commit the most violent outrages.

They are so strong that, in a wild state, one of these Baboons can easily overpower two or three men, if they be unprovided with weapons of defence.

The females seldom have more than one young one each: this they carry between their arms; and they have not been known to produce in any other than hot climates.

In confinement, these animals are always savage and ill-natured; they frequently grind their teeth, fret and chafe with the utmost fury. One that was exhibited at Edinburgh in 1779, uniformly presented to the spectators the most threatening aspect, and attempted to seize every person who came within the reach of his chain: on such occasions he usually made a deep grunting noise. So fond are these Baboons of eggs, that one of them has been known to put eight into his cheek-pouches at once; and then, taking them out one by one,

has been observed to break them at the end and deliberately swallow their contents. They may be induced to eat meat, but not unless it be cooked; they are particularly partial to wine and spirits. One of these animals, which Mr. Pennant saw at Chester, was of tremendous strength, and excessively fierce. Its voice was a kind of roar, not unlike that of a Lion, except that it was low and somewhat inward. It walked on all fours, and never stood on its hind legs unless it was compelled to do so by the keeper; but would frequently sit on its rump, in a crouching manner, and drop its arms across before its body. Mr. Pennant says that this animal was particularly fond of cheese; and that, whenever ears of wheat were given it, it dexterously picked out the grains, one by one, with its teeth, and ate them.

The capricious disposition of this Baboon often leads it to the most deliberate acts of mischief. Dr. Goldsmith says he has seen one of these animals break a whole service of china, evidently by design, yet without appearing to be in the least conscious of having done amiss.

THE MANDRILL, OR RIB-NOSED BABOON.

DESCRIPTION. In height this animal, when standing upright, measures from three feet and a half to four and a half or five feet. The face is naked; and the cheeks are of a violet-blue color, and have several oblique furrows. The nose is deep red. The skin round the eyes is violet; and the irides are hazel. The hair round the neck is very long. The hair of the sides of the head joins that at the top, and the whole terminates in a somewhat pointed form. The beard is yellowish. Each hair of the body is annulated with black and yellow, which gives to the whole fur a greenish brown appearance. This animal has pouches in its cheeks.

SYNONYMS. Simia Mormon. Simia Maimon. *Linnæus.*—Le Mandrill. Le Choras. *Buffon.* —Le Mandrill. *Geoffrey. Audebert. Latreille.*—Mantegar. *Phil. Tran.*—Great Baboon. Rib-nosed Baboon. *Pennant.*—Variegated Baboon. Maimon. *Shaw. Bew. Quad. p.* 456.

MANDRILL.

It is difficult to figure to the mind an animal more disgusting in its manners, or more hideous in its appearance, than the Mandrill. Under its projecting forehead are two small and vivid eyes, situated so near to each other that their position alone gives to the physiognomy an air of ferocity. An enormous muzzle, indicative of the most brutal passions, terminates in a broad and rounded extremity of a fiery red color, from which continually oozes a mucus humor. The cheeks, greatly swollen, and deeply furrowed, are naked, and of a violet-blue color. A narrow, blood-colored ridge extends down the

middle of the face, and terminates in the nose. The canine-teeth are sharp and extremely large. The tail is short; and the posteriors are naked and red, with shades of blackish and blue.

Never did the disposition of an animal answer more correctly to its physiognomy, than that of the Mandrill. None of the various means which have been adopted to subdue the ferocity of other beasts, have succeeded with this. Endowed, likewise, with muscular power and strength incomparably beyond those of man, the keepers of wild animals are always in dread of it. Its whole appearance, its gestures and its cries, are horrid; in short, it affords to us a striking emblem of vice in its greatest deformity.

MANDRILL.

But the Mandrill has not, in every part of its age, this excess of brutality. Until it has attained that period of its growth when the canine-teeth are first developed, which usually takes place about the age of two years, its face is black, and it is as gentle as most other young animals. After this time, however, but more particularly after its subsequent change of them, the hair becomes long and wiry, the cheeks assume their livid color, the body gradually takes its muscular form, and the ferocious passions are also developed.

It has been said that the voice of the Mandrill somewhat resembles the roaring of a Lion. Its cry is *aou*, *aou*, pronounced from the throat. These animals will live on fruit, carrots, and bread; and they eat to the amount of two or three pounds weight per day. They will likewise eat meat that has been cooked, but they always refuse such as is raw. When nuts are given to them, they crush them between their teeth, and they swallow indiscriminately both the shells and kernels. They are fond of fermented liquors, and particularly of wine and spirits.

Mandrills are found, in a wild state, on the Gold Coast, and in several other parts of Africa. Some of them are said also to be natives of the East Indies, and of the Islands of the Indian Archipelago.

THE DOG-FACED BABOON.

DESCRIPTION. The Dog-faced Baboon is betwixt four and five feet high. Their head and face greatly resemble those of a dog. The hair is of a dusky color, and peculiarly long and shaggy as far as the waist, but short on the hinder parts. The face is naked; and the ears are pointed and concealed in the fur.

The Dog-faced Baboons are natives of various parts of Africa and Asia.

SYNONYMS. Simia hamadryas. *Linnæus.*—Le Tartarin. *Brisson.*—Le Babouin à museau de Chien. *Buffon.*—Dog-faced Baboon. *Pennant. Shaw.*—*Shaw's Gen. Zool. Pl.* 15.—*Bewick's Quad. p.* 460.

These animals usually associate in vast companies. When travellers pass their haunts, they run into the nearest trees, and shake the boughs with great vehemence, at the same time chattering very

loudly. They are so powerful, as, without difficulty, to overcome a man; and they frequently commit such depredations in cultivated grounds, that the proprietors are compelled to have armed men continually on the watch to prevent them from plundering.

DOG-FACED BABOON.

Among the mountains near the Cape of Good Hope there are immense troops of these Baboons, or of a kind called *Ursine Baboons*, which are very nearly allied to them. When any person approaches their haunts, these animals set up a universal and horrible cry for a minute or two, and then conceal themselves in their fastnesses, and keep a profound silence. They seldon descend to the plains, except for the purpose of plundering the gardens that lie near the foot of the mountains. While they are engaged in this operation, they are careful to place sentinels for the purpose of preventing a surprise. They break the fruit in pieces, and cram it into their cheek-pouches, in order, afterwards, to eat it at leisure. The sentinel, if he sees a man, gives a loud yell; and the whole troop retreats with the utmost expedition, and in a most diverting manner, the young ones jumping on and clinging to the backs of their parents.

GROUP OF BABOONS.

When these animals discover any single person resting and regaling himself in the fields, they, if possible, approach behind, and snatch away whatever they can lay hold of; then, running to a little distance, they will turn round, seat themselves on their posteriors, and, with the most arch grimaces imaginable, will devour it before the man's face. They frequently hold it out in their paws, as if to offer it back again, and use such ridiculous gestures, that, although the poor fellow loses his dinner, he seldom can refrain from laughing.

These Ursine Baboons are indeed so numerous among the mountains, as, at times, to render it exceedingly dangerous for travellers to pass them. They sit undismayed on the tops of the rocks, and sometimes roll or throw from thence stones of immense size. A gun, in these cases, is generally of indispensable use, in driving them to such a distance that the stones they throw may do no material injury,

In their flight, even with their cubs upon their backs, they often make most astonishing leaps up perpendicular rocks. And their agility is so great as to render them very difficult to be killed, even with firearms.

Lade has very accurately described their manners. "We traversed a great mountain near the Cape of Good Hope, and amused ourselves with hunting large Apes, which are very numerous in that place. I can neither describe all the arts practiced by these animals, nor the nimbleness and impudence with which they returned, after being pursued by us. Sometimes they allowed us to approach so near, that I was almost certain of seizing them. But when I made the attempt, they sprang, at a single leap, ten paces from me, and mounted the trees with surprising agility. They thence looked at us with great indifference, and seemed to derive pleasure from our astonishment. Some of them were so large, that, if our interpreter had not assured us they were neither ferocious nor dangerous, our number would not have appeared sufficient to protect us from their attacks. As it could serve no purpose to kill them, we did not use our guns. But the captain levelled his at a very large one that was seated on the top of a tree. This kind of menace, of which the animal, perhaps, recollected his having sometimes seen the consequences, terrified him to such a degree, that he fell down motionless at our feet, and we had no difficulty in seizing him. But, when he recovered from his stupor, it required all our dexterity and efforts to keep him. We tied his paws together, but he bit so furiously, that we were under the necessity of binding our handkerchiefs over his head."

In confinement these Baboons may be rendered docile; yet they always retain the disposition to revenge an injury. At the Cape they are often caught when young, and brought up with milk; and Kolben tells us, that they will become as watchful over their master's property as the most valuable house-dog is in Europe. Many of the Hottentots believe they can speak, but that they avoid doing so least they should be enslaved, and compelled to work. Though not naturally carnivorous, they will eat either meat or fish that is cooked. They are generally kept chained to a pole; and their agility in climbing, leaping, and dodging any one that offers to strike them, is almost incredible. Though one of these animals was thus tied up, it was impossible, at the distance of a few yards, to hit him with a stone. He would either catch it, like a ball, in his paw, or he would avoid its blow with the most astonishing agility.

These Baboons are sometimes hunted with dogs; but it is found necessary to have a considerable number in the chase. A single dog is by no means sufficient; for if the Baboon can but once lay hold of a dog by the hind legs, he will swing him round till he is giddy. With their immense teeth they also bite violently, and, by means of them, they are able to defend themselves with the utmost obstinacy.

This seems to have been the kind of Ape that M. le Vaillant had long with him in his travels through the southern parts of Africa, and to which he gave the name of *Kees*. It was of infinite use to his people; was more watchful than any of his dogs; and frequently warned him of the approach of predacious animals, when the dogs seemed unconscious that such were near.

GREY BABOON.

Both the Dog-faced and Ursine Baboons have been frequently brought into England. In the month of February, 1820, there were two young ones in the menagerie at Exeter Change.

The Grey Baboon is found in the East of Africa, where they do much damage to the coffee plantations. They are large and rather formidable animals.

III. MONKEYS.

THE EGRET MONKEY.

DESCRIPTION. This species of Monkey is about two feet in height. It has somewhat the color of a wolf; and the feet are black. The head is large and ugly. The nose is depressed, the cheeks are wrinkled, the eyebrows prominent and bristly, and the lip is cleft with a double fissure. On the top of the head there is a pointed tuft of hair.

SYNONYMS. Simia Aygula. *Linn.*—L'Aigrette. *Buffon. Audebert.*—Egret Monkey. *Pennant. Shaw.*

EGRET MONKEY.

IN the forests of Southern Africa, India, and Java, these Monkeys are frequently seen by travellers to gambol on the trees with great liveliness and activity; and among the branches of these they keep up an incessant noise during the night. They often assemble in troops, for the purpose of plundering the plantations. When they have entered a field of millet, they load themselves with this grain, by taking in their mouths and in each paw as much as they can carry, and putting a quantity of it under their arms. Thus laden they return to their retreats, leaping all the way on their hind feet. If pursued, they do not, in their alarm, let the whole fall, in order to run off: they drop the stalks which they hold in their hands, and under their arms, that they may run on their four feet, which they do with more speed than on two; but they still retain what they carried in their mouth. In collecting the maize, they examine, with the most scrupulous accuracy, every stalk they pull; and those which they find not perfectly suited to their purpose they throw away. By this delicacy of choice they often do infinitely more damage than even by what they carry off to their habitations.*

Few animals are more dirty, ugly, or loathsome than the Egret Monkeys. When awake they frequently grind their teeth, and knit their brows; and during these and their various other grimaces, they can scarcely be viewed without disgust and horror. Yet if taken young, and reared with attention, they will become exceedingly mild

* This account has been applied by some naturalists only to the present species; but Bosman, who is their principal authority, makes it common to most of the Monkeys that are found on the coast of Guinea.

and tractable. M. Audebert informs us that he has seen a female of this species, which exhibited symptoms of the sincerest affection towards a small Magot (perhaps Pigmy Ape) that was confined in the same cage. The Egret was attentive to its wants, caressed, and frequently held it to her bosom in her folded arms.

THE CHINESE MONKEY.

DESCRIPTION. The Chinese Monkey has its name from the singular disposition of the hair on the top of its head this is parted in the middle; lies smooth over each side, and spreads in a circular manner, so as somewhat to resemble a Chinese cap. It is about the size of a cat, has a long tail, and is of a pale yellowish brown color.

SYNONYMS. Simia Sinica. *Linnæus.*—Le Bonnet Chinois. *Buffon. Audebert.*—Chinese Monkey. *Pennant. Shaw.—Shaw's Gen. Zool. Pl.* 20, *from Buffon*

BABOON AND CHINESE MONKEY.

If we may believe the accounts which various travellers have given of the parts of the East Indies, and the Indian Islands, which are inhabited by these Monkeys, the proprietors of corn-fields and of sugar-plantations are frequently injured to a great extent by their predatory incursions. In their depredations in the sugar-grounds, etc., they always place a sentinel, on some adjacent tree, to watch whilst the rest load themselves with plunder. If any person approach he screams loudly to his companions, each of which, seizing as many canes as he can grasp, in his right arm, instantly runs off on three legs. If closely pursued, they throw away their prize, and endeavor to save themselves by scrambling up the trees.

When corn, fruit, and succulent plants fail, they eat insects; and they sometimes descend to the margins of rivers, and to the sea-coast, in order to catch fish and crabs. They are said to put their tail betwixt the pincers of crabs, and, when these are closed, to carry them off, and eat them at leisure. They also gather cocoa-nuts, and are well-acquainted with the method of extracting the juice for drink, and the kernel for food. Indeed, the natives of India often catch these Monkeys by means of a cocoa-nut with a hole in it. This is laid near their haunts, and some one of them takes it up, and with difficulty thrusts his paw into the hole in order to get at the kernel; the people who are on watch then immediately run up, and seize the animal before he can disengage himself.

These Monkeys, like most others of their tribe, are wonderfully active. They leap, with great agility, from tree to tree; and even the females, although loaded with their young ones, are able to leap

nearly as well as the rest. We are informed by Pryard, that, in Calicut, they were formerly so numerous, and so impudent, that the inhabitants were under the necessity of having trellises to their windows, in order to prevent them from entering into and plundering their houses.

THE STRIATED MONKEY.

DESCRIPTION. This animal is no larger than a squirrel. Its tail is long, thickly covered with fur, and beautifully marked, through its whole length, with alternate rings of black and white. The body is of a reddish ash-color, slightly undulated with dusky shades. The face is flesh-colored, and has on each side a large and thick tuft of milk-white hair, standing out before the ears. The paws, which are covered with hair, have sharp nails. *Shaw.*

SYNONYMS. Simia iacchus. *Linnæus.*—L'Oustiti. *Buffon. Audebert.*—Striated Monkey. *Pennant.*—Sanglin. *Kerr.*—*Shaw's Gen. Zool. Pl.* 25.—*Bew. Quad. p.* 475.

STRIATED MONKEY.

In a native state these beautiful little creatures, like most others of their tribe, live in society, on trees. They inhabit the woods and forests of South America, where they subsist chiefly on fruit and vegetables: those, however, which have been kept in a state of captivity, have been known to feed on fish, insects, and worms. One that was brought to England in an East India ship would eat nuts, but could not be prevailed with to touch ripe fruit. This creature was peculiarly fond of the smaller kinds of spiders and their eggs; but he uniformly refused the larger ones, as well as the large blue-bottle flies, though he frequently ate those of the common species.

Mrs. Kennon, formerly midwife to the Royal Family, had a Striated Monkey. It ate of many different kinds of food, such as biscuits, fruit, vegetables, insects, and snails; and once, when let loose, it snatched from a basin of water, a Chinese Gold-fish, which it killed and greedily devoured. After this, by way of trial, some live eels were given to it: these at first frightened it, by twisting round its neck; but it soon called forth resolution enough to master and eat them.

Striated Monkeys may be rendered exceedingly tame and gentle; and they are so hardy as sometimes to produce young ones in the more southern parts of Europe. M. Audebert informs us that this has been the case, even so far north as in Paris. A pair of these monkeys, which belonged to a Mr. Cook, a London merchant, who resided in Lisbon, had young ones at that place. At their birth they had little fur upon them, and were excessively ugly. They frequently clung fast to the breast or back of their mother; and when she was tired of her burden, she would rub them off against the wall, or whatever else was near, as the only mode of ridding herself of them. Whenever this was the case, the male immediately took them to him, and suffered them to hang for a while round him.

The voice of the Striated Monkey is a kind of shrill hissing whistle. Most of the individuals have a somewhat musky smell. Linnæus remarks that they are great enemies to cats.

THE HOWLING MONKEY.

DESCRIPTION. These animals are not of large size. Their usual length is about one foot nine inches, from the extremity of the muzzle to the base of the tail. M. Le Vaillant, however, had the head of one which must have been at least twice this size. The tail is prehensile, about the same length as the body, and naked at the under part of the extremity. The general color of the fur is a bright chestnut, or ferruginous red. The face is naked and black.

SYNONYMS. Simia seniculus. *Linn.*—L'Alouette. *Buffon. Audebert.*—Royal Monkey. *Pennant. Shaw.*—Guariba. *Marcgrave.*—Hurleur, in Cayenne.—Arabata, in Oronoko.

HOWLING MONKEY.

The howling of these Monkeys in the woods, during the night, is truly horrid. It has been compared by some travellers to the screaming of immense herds of swine, and by others to the rolling of drums. It usually commences at the close of dark, and again about two hours before daylight in the morning. A person hearing it for the first time, would fancy himself about to be attacked by ferocious beasts from some nearly adjacent forest, when in fact the animals from which it proceeds, may be distant from him a mile or more. Some travellers have asserted that the Howling Monkeys are very methodical in this kind of vocal concert. We have been informed that one of them mounts a high branch, and that the rest seat themselves beneath. He begins his howl, and continues it for a considerable while by himself: then, upon a signal given, the whole assembly join in chorus. When at last they cease, it is stated to be on another signal, which is given for that purpose by the leader. This extraordinary noise is made by means of a peculiar long bony process in the throat, the concavity of which augments the sound in a very surprising manner.

These Monkeys usually assemble in troops of from fifteen to thirty. They are not considered to be in any respect dangerous, and always run away with great fear from the hunters, leaping from tree to tree with wonderful agility. But if only a single person approach their haunts, they have courage enough to tease and threaten him. Dampier, speaking of those in the Bay of Campeachy, says that they danced from tree to tree over his head, chattering and making a terrible noise, and many grimaces and antic gestures. Some of them broke down dry sticks and flung at him. One that was bigger than the rest came to a small limb just over his head, and leaping directly at him, made him start back; but the Monkey caught hold of the bough by the tip of his tail, and there remained swinging backward and forward, making mouths at him. At last he passed on, they still keeping him

company, with the like menacing gestures, till he came to the huts where his people were collected.

He informs us that they are sullen when seized, and extremely difficult to be taken when shot; for that they will cling with their tail and feet to a bough, as long as any life remains. "When I have shot at one, and broken its leg or arm, (he says,) I have pitied the poor creature, to see it look at and handle the broken limb, and then turn it from side to side, in a manner so mournful as scarcely to be described."

When M. Oexmelin was in South America, he attended the hunting of these animals, and was surprised at their sagacity, not only in distinguishing particularly those who were active against them, but, when attacked, in defending themselves and providing for their own safety. He remarked that they never abandoned each other; that they leaped from tree to tree with incredible agility; and that they flung themselves headlong from branch to branch, without ever falling to the ground, always catching hold with their hands or tail. He says, that if they are not shot dead at once they cannot be taken; for even when mortally wounded they will remain fixed to the trees, where they often die, and from which they do not fall till they are corrupted. More that four days after death he has seen them firmly fixed to the trees; and fifteen or sixteen were sometimes shot before three or four could be obtained.

These Monkeys often descend to the sea-shore in order to feed on shell-fish. Dampier informs us that he has seen several of them take up oysters from the beach, lay them on one stone, and beat them with another till they demolished the shells; after which they devoured the contents.

The females produce two young ones at a birth; and these, on all occasions, cling so tenaciously to the back of their mother, that there is no other method of obtaining one of them than by shooting the parent. When brought up in captivity they lose their voice, have always a sad and mournful air, and soon pine away and die. In confinement they are indolent and slow in all their motions; and their chief delight seems to consist in coiling the extremity of their tail round some object placed for the purpose, and thus suspending themselves, with their heads downward.

Many of the voyagers describe the flesh of these Monkeys as excellent eating, and as having a great resemblance in taste to mutton. Dampier says, that he never ate any thing more delicious. The heads are frequently served up in soup; but there seems something extremely disgusting in the idea of eating what appears, when skinned and dressed, so like a child. The skull, the paws, and indeed every part of them reminds us, much too strongly, of the idea of devouring a fellow-creature.

THE FOUR-FINGERED MONKEY.

DESCRIPTION. The length of this Monkey is about eighteen inches, exclusive of the tail, which measures nearly two feet. Its legs and arms are so long that the animal has hence obtained the name of *Spider Monkey*. The face is naked and of a copper color; and the body, which is of a peculiarly slender form, is covered on all parts with long black hair. The under side of the extremity of the tail is naked. These animals have no thumbs on their fore-feet.

SYNONYMS. Simia paniscus. *Linn.*—Le Coiata. *Buffon.* *Aubebert*—Spider Monkey. *Edwards.*—Quato, in Surinam.—Chamek, in Peru.

THE FOUR-FINGERED MONKEY.

These are bold and active animals, full of gambols and grimaces; but in their disposition mild and docile. From their numbers and activity they enliven many of the dreary forests of South America. When engaged on expeditions of plunder, they, like others of their tribe, have the sagacity to place sentinels on the adjacent trees, in order to give warning of the approach of danger. It has been said by Ulloa, that, in their native forests, when they want to pass from top to top of lofty trees, too distant for a leap, they will form a kind of chain, by hanging down linked to each other by their tails; and that they will swing backward and forward in this manner till the lowest monkey catches hold of a bough of the next tree, from which he draws the rest up. We are also told, that, by a similar expedient, they occasionally cross rivers, where the banks are steep.

In Guiana, these Monkeys are said to be extremely numerous. They live chiefly on fruit and roots, though they will occasionally eat insects and worms: they are likewise fond of shell-fish.

When running about in forests, they are sometimes guilty of very mischievous pranks. They are not, like the Howling Monkeys, alarmed at the approach of hunters, unless they have guns; but at the report of these they all immediately run away. Sometimes they will break pieces off the branches of trees, and throw them with great dexterity at the men as they pass below; and they not unfrequently adopt even more unpleasant modes of repulsion. In these situations they assume a thousand attitudes, which often afford great diversion to the spectators.

The agility with which they pass from one tree to another is really wonderful. M. Audebert says, that he has seen a Four-fingered Monkey climb up one of the trees on the Boulevards of Paris; where, coiling his tail round one of the branches, it swung itself a few times backward and forward, and then, with the force thus acquired, darted into the next adjacent tree.

The countenance of these animals has at all times a grave and melancholy expression. They are easily tamed, but, by confinement, they lose much of their natural playfulness: they seem to shun the

sight of mankind, and usually sit with their heads bent upon their stomach, as if to conceal themselves from observation. When touched they utter a plaintive kind of cry; and they have another kind of sound, nearly similar, which they emit in testification of delight at receiving any kind of food to which they are particularly partial. These animals are peculiarly dexterous in the use of their tail. They can pick up with it objects so small as bits of wood or straw. M. Audebert says, that he has seen a four-fingered Monkey carry hay with its tail, for the purpose of making its bed, and move and spread it about with as much facility as an elephant could have done with his trunk. A four-fingered Monkey has also been known, in its frolic, to lay hold in this manner of a squirrel, which had been put into the same cage with it as a companion.

So delicate are these Monkeys, that it is not without great difficulty that they can support a long voyage. The consequence is, that they are not often brought alive into England; and that, even if they arrive in tolerable good health, the cold of our northern climate soon destroys them.

It was a Monkey either of this species, or of one nearly allied to it, which Captain Stedman shot whilst in Surinam, for the purpose of making it into broth, and the destruction of which was, he says, attended with such circumstances as almost ever afterward deterred him from going a monkey-hunting. The narrative is so interesting, that I shall give it in his own words. "Seeing me near the bank of the river in the canoe, the creature made a halt from skipping after his companions, and, being perched on a branch that hung over the water, examined me with attention, and with the strongest marks of curiosity, no doubt taking me for a giant of his own species; while he chattered prodigiously, and kept dancing and shaking the bough on which he rested, with incredible strength and agility. At this time I laid my piece to my shoulder, and brought him down from the tree into the stream. But may I never again be witness to such a scene! the miserable animal was not dead, but mortally wounded. I seized him by the tail, and, taking him in both my hands, to end his torment swung him round, and hit his head against the side of the canoe: but the poor creature still continuing alive, and looking at me in the most affecting manner that can be conceived, I knew no other means of ending his murder, than to hold him under the water till he was drowned; while my heart sickened on his account: for his dying eyes still continued to follow me with seeming reproach, till their light gradually forsook them, and the wretched animal expired. I felt so much on this occasion, that I could neither taste of him nor of another which had been shot at the same time, though I saw that they afforded to my companions a delicious repast."

Of the same species Captain Stedman relates a circumstance very remarkable. He says, that he one day saw from his barge, one of these Monkeys come down to the water's edge, rinse its mouth, and appear to clean its teeth with one of its fingers.

THE FEARFUL MONKEY.

DESCRIPTION. This Monkey is about the size of a small cat, and its tail is somewhat longer than the body. The tail is prehensile, but it is not naked at the under part of the extremity. The individuals vary much in color; some being red, others brown, and others grey. The legs, thighs, feet, and tail, are black. The face and ears are naked, and of a dark flesh-color.

These Monkeys are extremely common in the woody districts of Cayenne and Surinam.

SYNONYMS. Simia trepida. *Linn.*—Le Sajou. *Buffon.*—*Audebert.*—Fearful Monkey. *Pennant.*—Bush-tailed Monkey. *Edwards.*—Sajouassou, in South America.

THE FEARFUL MONKEY.

There is no species of Monkey more agile, dexterous, and amusing than this. Even the Indians of South America, who, in general, are very inattentive to this race of animals, are frequently induced to stop their canoes, in order to admire the playfulness and grimaces of these Monkeys, in the forests adjacent to the rivers. Their troops usually consist of from twenty to forty individuals. They frequently whistle. When enraged, they shake their heads violently; and utter, in a ferocious tone, the syllables *Pi, ca, rou.* Their tail is prehensile, but they use it with much less address, in laying hold of objects, than the four-fingered Monkey.

Of all the Monkeys of South America these are the best able to support the rigor of our climate. If attended to with care, they will live comfortably in a room without fire. Of this M. de Buffon mentions two instances; and he speaks of their affection toward their offspring as peculiarly interesting. A female that was kept at Bourdeaux, in the year 1764, produced there a young one. Nothing, he says, could be more beautiful than to see the two parents occupied with their little charge, which they teased incessantly, either by carrying it about, or by caressing it. The male loved it to distraction. They carried it alternately; but now and then, when it did not hold properly, they gave it a severe bite.

So gentle and domestic are these Monkeys, when treated kindly, that it is not necessary to keep them chained. But if they be permitted to range at liberty, their restless and curious or inquisitive disposition renders them occasionally very troublesome. They will break, tear, and upset almost every thing that lies in their way.

Their food is fruit, bread, or roots; and they will devour large insects of all kinds. They search eagerly after spiders, of which they are peculiarly fond. They are partial both to wine and spirits. It is said, that in Cayenne no other animals of the same tribe are such excellent guards of the houses as these. Some of them have been rendered so tame as to follow their master out of doors like a dog. They are, however, extremely whimsical in their attachments, entertaining for some persons great partiality and for others the most decided aversion.

THE SQUIRREL-MONKEY.

DESCRIPTION. This animal is about the size of a Rabbit. The color of its body is reddish and the tail is black at the extremity. The fore-feet are orange-colored. The head is very round, and the face milk-white, with a round black patch in the middle, in which are the mouth and nostrils. The eyes are black and lively.

SYNONYMS. Simia Sciurea. *Linnæus.*—Orange Monkey. *Pennant.*—Caitaia. *Maregrave.*—Le Siamiri. *Buffon. Audebert.*—Keesee-Keesee. *Stedman.*—Squirrel Monkey. *Shaw. Shaw's Gen. Zool. Pl.* 25.

SQUIRREL-MONKEY.

In his account of Surinam, Capt. Stedman informs us, respecting these Monkeys, that he saw them daily passing along the sides of the river, skipping from tree to tree, regularly following each other, like a little army, with their young ones at their backs, not unlike small knapsacks. Their manner of travelling is this: the foremost walks to the extremity of a bough, from which it bounds to the extremity of one belonging to the next tree, often a surprising distance and with such wonderful activity and precision, that it never once misses its aim: the others one by one, and even the females with their little ones at their backs, which stick fast to their mother, follow their leader, and perform the same leap with the greatest apparent facility and safety. They are also remarkable for climbing up the *nebees*, or natural ropes, with which many parts of the forest are interwoven.

WHITE-NOSED MONKEY.

WHITE-NOSED MONKEY.

The White-nosed Monkey is an African species. Its name is given from the color of its nose; its body is black, with a lighter tint in the under part.

THE PINCHE.

The Pinche is one of the American Monkeys. It abounds in the forests of Columbia. Its body is only seven

PINCHE.

DIANA MONKEY.

inches long. Its head is covered with long white hair; other parts of the body are white, mixed with red.

DIANA MONKEY.

The Diana Monkey has a white crescent on its brow, from which it has received its name. It is found on the west coast of Africa. It is docile in captivity, and is remarkable for the grace of its movements. Specimens of this species were formerly in possession of the London Zoological Society.

THE MARMOSET MONKEY.

The Marmoset, says Wood, is a most interesting little creature. It is exceedingly sensitive to cold, and when in England is usually occupied in nestling among the materials for its bed, which it heaps up in one corner, and out of which it seldom emerges entirely. It will eat almost any article of food, but is especially fond of insects, which it dispatches in a very adroit manner. It will also eat fruits, especially those of its native country. Its fondness for insects is carried so far, that it has been known to pinch out the figures of beetles in an entomological work, and swallow them.

A beautiful little Marmoset in the Zoological Gardens ate a great number of flies which were caught and presented to it. Its little eyes sparkled with eagerness each time that it saw the hand moving toward a fly settled out of its reach, and it even ventured from its warm wooly nest, and climbed up the wires of its cage as it saw the fly approaching. It was also rather expert at catching for itself the flies that settled on the bars of the cage. A blue-bottle fly was evidently considered a great prize.

THE AGILE GIBBON MONKEY.

The Agile Gibbon, says Wood, is a native of Sumatra. It derives its name of Agile from the wonderful activity it displays in launching itself through the air from branch to branch. One of these creatures, that was exhibited in London some time since, sprang with the greatest ease through distances of twelve and eighteen feet; and when apples or nuts were thrown to her while in the air, she would catch them without discontinuing her course. She kept up a succession of springs, hardly touching the branches in her progress, continually uttering a musical but almost deafening cry. She was very tame and

gentle, and would permit herself to be touched or caressed. The height of the Gibbon is about three feet, and the reach of the extended arms about six feet. The young Gibbon is usually of a paler color than its parent. There are several species of Gibbon, amongst which some naturalists include the Siamang, a Monkey chiefly celebrated for the pains it takes to wash the faces of its young, a duty which it conscientiously performs in spite of the struggles and screams of its aggrieved offspring.

AGILE GIBBON.

WHITE-EYE-LID MONKEY.

THE WHITE-EYE-LID MONKEY.

The White-Eye-lid Monkey is one of the African species It has a slender form and a very long tail; a long face and white eye-lids. A beautiful specimen of this species was recently exhibited at the Gardens of the Zoological Society in London.

THE WANDEROO MONKEY.

A specimen of this species, brought from the East Indies, was exhibited at the Gardens of the Zoological Society. It has an abundance of long hair about the head: which gives it rather a savage aspect. Its color is black, and its manners in captivity are docile. It is playful, and not much given to mischief. It has sometimes been called the lion-tailed monkey. It is found in Ceylon, and some of the other eastern Islands.

WANDEROO MONKEY.

MONA MONKEY.

THE MONA MONKEY.

This is a graceful and beautiful species, found in the northern parts of Africa. It is of a dark brown color on the upper part of the body, and white beneath. Its forehead has a crescent of white hairs like the Diana Monkey, and its neck is adorned with a sort of frill of light hair. One of these Monkeys was in possession of the London Zoological Society.

THE KAHAU OR PROBOSCIS MONKEY.

The Kahau is a native of Borneo. It derives its name from the cry it utters, which is a repetition of the word "Kahau." It is remarkable for the extraordinary size and shape of its nose, and the natives relate that while leaping it holds that organ with its paws, apparently to guard it against the branches. As may be seen from the engraving it is not an animal of very captivating appearance; but when it has been macerated in spirits of wine for a few months, its ugliness is quite supernatural. Naturalists formerly supposed that there were two species of this animal,—the nose of one being aquiline like that of the Monkey in the accompanying cut; and that of the other being slightly retroussée. It was discovered, however, that the latter animal was only the young Kahau, whose nose had not reached its full beauty.

KAHAU OR PROBOSCIS MONKEY.

The length of the animal from the head to the tip of the tail is about four feet four inches; and its general color is a sandy red, relieved by yellow cheeks and a yellow stripe over the shoulders.

THE GUEREZA.

This animal has the head, face and neck, back, limbs, and part of the tail, covered with short black hair; the temples, chin, throat, and a band over the eyes white; the sides, flanks from the shoulders downward, and loins clothed with long white hair, which hangs down on

GUEREZA MONKEY.

each side, like a loose garment. It is found in Abyssina; there is a specimen in the British Museum.

AYE-AYE.

This animal is considered by the naturalists as something between a Squirrel and a Monkey. It is found in Madagascar. Its habits are nocturnal; its eyes are like those of an owl, and it sees badly by day. It is sluggish, very sensitive to cold, and slow of motion. It lives in the woods on birds, fruits, and other vegetable matter and on insects.

AYE-AYE MONKEY.

COLLARED TEE-TEE MONKEY.

THE COLLARED TEE-TEE.

The Collared Tee-Tee, or White-throated Squirrel Monkey, says Wood, is found to the east of the Orinoca. It lives on small birds, insects, and fruits. Its habits are, apparently, mild and inoffensive, but its acts belie its looks, for when a small bird is presented to it, it springs upon its prey, like a cat, and speedily devours it.

THE FULL-BOTTOM.

This animal is found in Sierra Leone, where it is much sought by the natives, for the purpose of applying its singularly beautiful hair to purposes of ornament. While the body is black, the head and shoulders are covered with an enormous quantity of white hair, giving the animal the appearance of wearing an old-fashioned full-bottomed wig, from which circumstance it is sometimes called the Full-Bottom.

FULL-BOTTOM MONKEY.

ANECDOTES OF SOME UNASCERTAINED SPECIES OF MONKEYS.

GROUP OF MONKEYS.

M. D'Obsonville, speaking of the sanctuaries for Monkeys in several parts of India, says, that when travelling he has occasionally entered these ancient temples to repose himself, and that the animals were not in the least alarmed at his approach. He has seen several of them at first considering him, and then attentively looking at the food he was about to eat. Their eyes and agitation always painted their inquietude, their passion to gormandize, and the strong desire they had to appropriate at least a part of his repast to themselves.

In order to amuse himself on these occasions, he always took care to provide a quantity of parched peas. At first he would scatter a few on the side where the chief was, (for he says they have always a principal Monkey to head them,) and the animal would approach by degrees, and collect them with avidity. He then used to present his hand full; and, as they are in general accustomed to see none but pacific people, the chief would venture, but in a sideling manner, to approach, as if eagerly watching that there was no sinister contrivance. Presently, becoming bold, he would seize the thumb of the hand in which the peas were held, with one paw, and take the corn out with the other, keeping at the same time his eye steadily fixed on those of M. D'Obsonville. "If," continues this writer, "I laughed or moved, he would break off his repast, and working his lips, would make a kind of muttering, the sense of which, his long canine teeth, occasionally shown, plainly interpreted. When I threw a few at a distance, he seemed satisfied that others should gather them; but he grumbled at, and sometimes struck, those that came too near me. His cries and solicitude, though in part, perhaps, the effect of greediness, apparently indicated his fear, lest I should take advantage of their weakness to ensnare them: and I constantly observed that those which were suffered to approach me nearest, were the well-grown and strong males; the young ones and the females were always obliged to keep at a considerable distance.

Monkeys are generally peaceable enough among each other. In extensive, solitary, and fertile places, herds of different species some

times chatter together, but without disturbance or any confusion of the race. When, however, adventurous stragglers seem desirous of seeking their fortunes in places of which another herd is in possession, these immediately unite to sustain their rights. M. de Maisonpré, and six other Europeans, were witnesses to a singular contention of this nature, in the enclosures of the Pagodas of Cherinam. A large and strong Monkey had stolen in, but was soon discovered. At the first cry of alarm, many of the males united, and ran to attack the stranger. Though much superior both in size and strength to his opponents, he saw his danger, and ran towards the top of a pyramid, eleven stories high. Thither he was instantly followed; but when he had arrived at the summit of the building, which terminated in a small round dome, he placed himself firmly, and taking advantage of his situation, he seized three or four of the most hardy, and precipitated them to the bottom. These proofs of his prowess intimidated the rest, and, after much noise, they thought proper to retreat. The conqueror remained till evening, and then betook himself to a place of safety.

Numerous species of Cercopitheci overrun Africa. Mrs. Lee possessed one from the Gambia, which was grey and yellow, and which evinced great attachment and intelligence, but was abominably mischievous, and was never let loose without committing some misdemeanor, such as breaking everything he could dash to the ground, and deliberately tearing all yielding materials to pieces, &c. He was brought to London, and afterwards taken to the Jardin du Roi in Paris, where, after an absence of two years, he recognized his mistress by the sound of her voice, and furiously shook the bars of his cage till she came to him, when he instantly held his head down for her to rub it. But the most amusing of all Monkeys was Jack from Senegal (also a Cercopithecus), who belonged to the cook of the vessel in which Mrs. Lee sailed to England. She was one day sitting alone on the deck, in a dead calm, when Jack, whom she had never before noticed, suddenly jumped upon her shoulders, and chattered in her face; she sat perfectly still, although very much inclined to shake him off; he then descended into her lap, and examined the rings on her fingers with the greatest attention, every now and then looking into her face; and from that moment she was his especial favorite. He was often banished to an empty hen-coop when he was particularly troublesome, from which she so constantly rescued him, that whenever he had done wrong, he would take refuge with and hide himself close to her.

Their conduct towards such of their brethren as become captives is very remarkable. If one of them be chained in their neighborhood, especially if of the society to which he belonged, they will attempt various means, for some time, to procure his liberty; but when their efforts prove ineffectual, and they see him daily submit to slavery, they will never again receive him among them, but even if he should escape, they will fall upon and beat him away without mercy.

When Captain Percival was at Columbo, there was a mischievous

Monkey which was permitted to run wild about the fort, and was so very cunning that it was impossible to catch him. One day this animal suddenly made his entrance into the captain's apartment, carried off a loaf of bread from his table and made its escape. He immediately gave the alarm to an officer whom he observed standing at the next door; upon which the officer ran in to secure his own breakfast; but, to his great mortification, he found that the Monkey had been beforehand with him, and was already scrambling up to the roofs of the houses, with a loaf in each paw. Next day the same Monkey snatched off a very fine parrot before the gentleman's face to whom it belonged, tore it to pieces, and then held it out to the gentleman, with many expressions of satisfaction and triumph at the exploit.

Condamine and Bouger saw, in Peru, some domesticated Monkeys of large size, which had been admitted into the apartments of the Academicians, during the time they were employed in making observations in the mountains. These animals greatly excited the astonishment of the Academicians, by afterwards, of their own accord, going through a series of imitations. They planted the signals, ran to the pendulum, and then immediately to the table, as if for the purpose of committing to paper the observations they had made. They occasionally pointed the telescopes towards the heavens, as if to view the planets or stars, and performed numerous other similar feats.

An occurrence which took place before the troops of Alexander the Great, is too singular and too amusing to be passed over in silence. The soldiers under the command of this monarch always marched in order of battle. They happened, one night, to encamp on a mountain, that was inhabited by a numerous tribe of Monkeys. On the following morning they saw, at a distance, what appeared to be an immense body of troops approaching them, as if with the intention of coming to an engagement. The commanders, as well as the soldiers, were in the utmost astonishment. Having entirely subdued the princes of the country, they were not able to imagine from what quarter this new force could have come: they had not previously been informed of any thing of the kind. The alarm was immediately given, and in a short time the whole Macedonian army was drawn up in battle array, to combat with this unexpected foe. The prince of the country, who was a prisoner in the camp, was interrogated respecting it. He was surprised to be informed of such a force in the neighborhood, and requested permission to behold it himself. He smiled at the error; and the Macedonians were not a little chagrined that they should have been such fools as to mistake a troop of these imitative animals for a band of armed men.

OF LEMURS IN GENERAL.

THE principal Linnean characteristics of this tribe are four front-teeth in the upper jaw, the intermediate ones remote: six long, compressed, parallel teeth in the under jaw; the canine teeth solitary; and the grinders somewhat lobated.

The animals have one sharp claw on each hind foot; all their other nails are flat.

In their habits and economy, as well as in their hand-like paws, the Lemurs have a very close alliance to the Monkeys. They principally differ from those animals in the shape of the head, which is somewhat like that of the Dog; and in the great length of their hind legs. The latter, indeed, are so long, that, when the animals walk on all-fours, their haunches are considerably more elevated than the shoulder. But this structure is of astonishing advantage to them in climbing into trees. Many of the species are so wonderfully active, that they leap from branch to branch, with a rapidity which the eye is scarcely able to follow.

THE BENGAL LORIS, OR SLOW LEMUR.

THE BENGAL LORIS, OR SLOW LEMUR.

This animal is about the size of a small cat. It is of a pale brown or mouse color; the face is flattish, and the nose is somewhat sharp. The eyes are extremely prominent: they are surrounded with a circle of dark brown, and a stripe of the same color runs along the middle of the back.

There are few quadrupeds so inactive, and so slow in their motions, as the Bengal Loris. Hence some naturalists have been induced to rank it amongst the Sloths, but it has no other resemblance whatever to the Sloth than this. It is a nocturnal animal, and sleeps, or at least lies motionless, during the greatest part of the day.

The late Sir William Jones, in the fourth volume of the Asiatic Researches, has given us an extremely pleasing account of one of these little creatures.

"In his manners he was for the most part gentle, except in the cold season, when his temper seemed wholly changed; and his Creator, who made him so sensible of cold, to which he must often have been exposed even in his native forests, gave him, probably for that reason, his thick fur; which we rarely see on animals in these tropical climates. To me, who not only constantly fed him, but bathed him twice a week in water accommodated to the seasons, and whom he

clearly distinguished from others, he was at all times grateful: but when I disturbed him in winter he was usually indignant, and seemed to reproach me with the uneasiness which he felt, though no possible precaution had been omitted to keep him in a proper degree of warmth. At all times he was pleased at being stroked on the head and throat, and he frequently suffered me to touch his extremely sharp teeth: but his temper was always quick; and when he was unseasonably disturbed, he expressed a little resentment, by an obscure murmur, like that of a Squirrel; or a greater degree of displeasure by a peevish cry, especially in winter, when he was often as fierce on being much importuned, as any beast of the woods.

"From half an hour after sun-rise to half an hour before sun-set, he slept without intermission, rolled up like a Hedgehog; and, as soon as he awoke, he began to prepare himself for the labors of *his* approaching day, licking and dressing himself like a cat; an operation which the flexibility of his neck and limbs enabled him to perform very completely: he was then ready for a slight breakfast, after which he commonly took a short nap: but when the sun was quite set, he recovered all his vivacity.

"His ordinary food was the sweet fruit of this country; plantains always, and mangoes during the season; but he refused peaches, and was not fond of mulberries, or even of guaiavas: milk he lapped eagerly, but was content with plain water. In general he was not voracious, but he never appeared satisfied with grasshoppers; and passed the whole night, while the hot season lasted, in prowling for them. When a grasshopper, or any insect, alighted within his reach, his eyes, which he fixed on his prey, glowed with uncommon fire; and having drawn himself back to spring on it with greater force, he seized the prey with both his fore-paws, but held it in one of them while he devoured it. For other purposes, and sometimes even for that of holding his food, he used all his paws indifferently as hands, and frequently grasped with one of them the higher part of his ample cage, while his three others were severally engaged at the bottom of it; but the posture of which he seemed fondest was to cling with all four of them to the wires, his body being inverted. In the evening he usually stood erect for many minutes, playing on the wires with his fingers, and rapidly moving his body from side to side, as if he had found the utility of exercise in his unnatural state of confinement.

"A little before day-break, when my early hours gave me frequent opportunities of observing him, he seemed to solicit my attention; and if I presented my finger to him, he licked or nibbled it with great gentleness, but eagerly took fruit when I offered it; though he seldom ate much at his morning repast: when the *day brought back his night*, his eyes lost their lustre and strength, and he composed himself for a slumber of ten or eleven hours.

"My little friend was, on the whole, very engaging; and when he was found lifeless, in the same posture in which he would naturally have slept, I consoled myself with believing that he died without much pain, and lived with as much pleasure as he could have enjoyed in a state of captivity."

In the year 1755, M. D'Obsonville purchased one of these animals in India. His voice was a kind of whistling by no means unpleasant. When his prey was attempted to be taken from him, his countenance changed to an appearance expressive of chagrin, and he inwardly uttered a tremulous, acute, and painful note. He was melancholy, silent, and patient. He generally slept during the day, with his head resting upon his hands, and his elbows between his thighs. But in the midst of this sleep, although his eyes were closed, he was exceedingly sensible to all impressions from without, and never neglected to seize whatever prey came inconsiderately within his reach. Though the glare of sunshine was unpleasant to him, it was never observed that the pupils of his eyes suffered any contraction.

During the first month he was kept with a cord tied round his waist, which without attempting to untie, he sometimes lifted up with an air of grief. M. D'Obsonville himself took charge of him, and at the beginning he was bitten four or five times for offering to disturb or take him up; but gentle chastisement soon corrected these little passions, and he afterwards gave the animal the liberty of his bed-chamber. Towards night the little creature would rub his eyes, then, looking attentively round, would climb upon the furniture, or more frequently upon ropes placed for the purpose.

Sometimes M. D'Obsonville would tie a bird in the part of the chamber opposite to him, or hold it in his hand, in order to invite him to approach: the animal would presently come near with a long, careful step, like a person walking on tiptoe to surprise another. When within a foot of his prey he would stop, and, raising himself upright, would advance, gently stretching out his paw; then, darting at it, would seize and strangle it with remarkable celerity.

This animal perished by an accident. He appeared much attached to his master, who always used to caress him after feeding. His return of affection consisted in taking the end of M. D'Obsonville's fingers, pressing them, and at the same time fixing his half-open eyes on those of his master.

THE MACAUCO, OR RING-TAILED LEMUR.

MACAUCO.

The Macauco is about the size of a small cat. In its general form it is long and slender. The muzzle is pointed, and there is a black space round each eye. The ears are oval. The forehead is white; and the back of the head, sides of the neck, and shoulders, are blackish. The back, and the outsides of the legs, are of a brownish grey color; and the throat, breast, and insides of the legs are whitish. The tail which is very long and thickly covered with hair, is

marked throughout its whole length with alternate black and white rings.

Although these animals have been frequently brought into Europe from Madagascar and other islands of the East, yet we are almost wholly ignorant of their habits, except in a domesticated state. It has, however, been ascertained, that they are creatures of great activity; and that, like the rest of their tribe, they subsist chiefly on fruit, and inhabit trees, where they live in troops, forty or fifty in number.

A Macauco, which was kept in the Museum of Natural History in Paris, had been in Europe more than nineteen years; and from the great age which this animal attained, it is natural to conclude that the temperature of an European climate was suited to its habits. Such, however, does not seem to be precisely the case. He appeared to suffer much from the cold, frequently rolling himself into a ball, and covering his back and head with his long and bushy tail. During the winter, he was always kept in a room that had fire in it; and, frequently for a long time together, he would sit before the fire, stretching out his little arms towards the flame to warm himself. Whenever he sat in the sun, he adopted the same attitude. He was so partial to heat, that he often burnt his whiskers and face, before he would remove to a greater distance. When the heat incommoded him, he would turn the sides of his head, alternately, to the fire in order to alleviate the pain thereby occasioned.

The animal had been previously accustomed to a chain; and consequently, when he was brought into the Museum he was suffered to range at freedom about the Conservatory. In this room were prepared the skins of such animals as were intended to enrich the collections; and the greatest attention was necessary to keep the creature out of mischief. Continually in motion, he handled and turned over almost every thing within his reach.

A board placed over the door served him for a bed. To this he retired at night, but never until he had first prepared himself for sleep, by at least half an hour's violent exercise in leaping about the room. As soon as this was ended he would lie down on his bed, and, in a few minutes afterwards, was fast asleep.

His usual food was bread, carrots, and fruit; and he was particularly fond of the latter. He would also eat eggs; and when young, was partial to baked meats and spirituous liquors. No creature could be more gentle than he, and on all occasions, he showed himself sensible of the kindnesses and attention he received. He exhibited no indications of particular attachment, but was familiar with every one; and would climb on the shoulders, and go to rest on the knees of any person who would suffer him to do so.

Several of these animals have, at different times, been imported into England. A Macauco that was in the menagerie at the Tower of London, although he would suffer himself to be handled, never failed to resent any attempt to tease him. He exhibited much dislike to children, and, had he not been chained, would sometimes have attacked them. He usually sat on his haunches in an upright posture, with

his tail elevated over his shoulders. Like the animal in the menagerie at Paris, he was extremely susceptible of cold; and, though kept in a warm room, would come as near to the fire as possible He did not usually sleep in the day-time; and at night would lie coiled up with his head under his breast, and his long bushy tail wrapped closely round his body.

The Indri is an active and intelligent animal of this tribe Although an inhabitant of deep forests, residing among the branches of the trees, and subsisting on vegetables and fruit, we are assured, by M. Sonnerat, that the Indri is so susceptible of education, that the natives of Madagascar are enabled to train it to the chase. This, if true, is a singular fact, as all other animals that are known to be employed in the chase, are themselves carniverous, and have been endowed with a natural instinct to pursue and destroy.

The Mongous, or Woolly Macauco. M. de Buffon possessed a Mongous during several years. For some time, at first, the animal was suffered to run at liberty about the house; but he became at length so troublesome that it was necessary to keep him chained. Whenever he escaped from his chain, he would visit the shops of the neighborhood, and would devour fruit, sugar, and sweetmeats, opening with wonderful dexterity the boxes that contained them. At such times it was difficult to retake him, as he would bite severely even those whom he best knew.

Whenever this animal was weary of being left alone, he made a loud kind of a noise, somewhat resembling the croaking of a frog. So fearful was he of cold and moisture, that he never willingly moved far from the fire. His chief food consisted of bread and fruits. His tongue was so rough that he could lick a person's hand until it became inflamed; and, if not guarded against, he would generally end this operation with a bite. This animal died of cold, in the winter of 1750, although, during the whole time, he had been kept in a perfectly warm place.

RUFFLED LEMUR.

The Lemurs, says Wood, derive their name from their nocturnal habits, and their noiseless movements. The Ruffled Lemur is a native of Madagascar. It lives in the depths of the forests, and only moves by night, the entire day being spent in sleep. Its food consists of fruits, insects and small birds, which latter it takes while they are sleeping. This is the largest of the Lemurs, being rather larger than a cat.

OF BATS IN GENERAL.

Bats have erect, sharp-pointed teeth, situated near together. Their fore-toes are elongated, and connected by the membranes which perform the office of wings. *Linn.—Gmel.* **i. 45.**

THESE very singular animals would seem, at first sight, to hold a kind of middle station between the quadrupeds and birds. It is, however, only in their power of raising themselves into the air, by means of the membranes which extend round their body, that they are in the least allied to the latter.

Their structure cannot be contemplated without admiration. The bones of their fore-feet are continued into long and thin processes, connected by a most delicately-formed membrane or skin, capable, from its thinness, of being contracted at pleasure into innumerable wrinkles, so as to lie in a small space when the animal is at rest, and to be stretched to a very wide extent for flight. Should a speculative philosopher, not aware of the anatomical impossibility of success, attempt, says Dr. Shaw, by means of light machinery, to exercise the power of flight, he could not hit on a more plausible idea than that of copying the structure described. Accordingly, a celebrated author has represented a sage theorist busied in imitating, for this purpose, "the folding continuity of the wing of the Bat."

Although this membrane enables the Bat, after it has once raised itself from the ground, to flit along the air, yet all its motions, when compared with those of birds, are clumsy and awkward; and, in walking, its feet appear so entangled with its wings, that it seems scarcely able to drag its body along.

The British Bats generally pass the winter, during the absence of their insect prey, in a torpid state, without either food or motion, suspended in some dark place, in old ruins, caverns, or in the hollows of decayed trees. During the time they remain in this state, most of the animal functions are so far suspended as scarcely to be perceptible. The action of the heart and arteries becomes so exceedingly languid, that the pulse can hardly be felt: if respiration be at all carried on, it is also so very slow as scarcely to be discernible. The natural temperature, or animal heat, sinks greatly below the usual standard; and digestion becomes altogether suspended. All the visible excretions are at a stand; and none of the functions seem to go on, excepting a very slow degree of nutrition, and an interchange of old for new matter, in the depository cells of the body.

Like the mouse, these animals are capable of being tamed to a certain degree; and we are told by Mr. White, that he was once much amused by the sight of a Bat that would take flies out of a person's hand. "If," says he, "you gave it anything to eat, it brought its wings round before its mouth, hovering and hiding its head in the manner of birds of prey when they feed. The adroitness it showed in shearing off the wings of flies, (which were always rejected,) was

worthy of observation. Insects seemed to be most acceptable, though he did not refuse raw flesh when offered; so that the notion that Bats go down chimneys and gnaw people's bacon, seems, upon the whole, no improbable story." While Mr. White amused himself with this quadruped, he saw it several times confute the vulgar opinion that Bats, when on a flat surface, cannot get on wing again; for it rose with great facility from the floor.

From experiments made by Spallanzani, on the Long-eared, the Horse-shoe, and the Noctule Bats, it appears that these animals possess some additional sense, which enables them, when deprived of sight, to avoid obstacles as readily as when they retained the power of vision.

After their eyes had been covered, or even when they were put entirely out, they would fly about in a darkened chamber, without ever striking against the walls, and would always suspend their flight, with caution, when they came to a place where they could perch. In the middle of a dark sewer, that turned at right angles, they would, though at a considerable distance from the walls, regularly bend their flight with the greatest nicety. When branches of trees were suspended in a room, they always avoided them; and flew betwixt threads hung perpendicularly from the ceiling, though these were so near each other that they had to contract their wings in passing through them. M. Jurin supposes that the sense which enables the Bats to peform these unaccountable operations, is lodged in the expanded nerves on the nose; but, in several of the species, the membrane in which these nerves end is wanting. Some persons have supposed that this power of avoiding obstacles in the dark is dependent principally on the ears; for, when the ears of the blinded Bats were closed, they flew against the sides of the room, and did not seem at all aware of their situation.

Several Bats were collected by Mr. Carlisle, for the purpose of the above experiments, and they were preserved in a box for more than a week. They refused every kind of food for several days. During the daytime they were extremely desirous of retirement and darkness, and, while confined to the box, they never moved or endeavored to get out while it was light. Even when they were put out on the carpet, they commonly rested for a few minutes, and then, beginning to look about, crawled slowly to some dark corner or crevice. At sunset the scene was quite changed; every one then endeavored to scratch its way out of the box; a continued chirping was kept up, and no sooner was the lid of the prison opened, than each was active to escape, either flying away immediately, or running nimbly to a convenient place for taking wing. When these Bats were first collected, several of the females had young ones clinging to their breasts in the act of sucking. One of them flew with perfect ease, though two little ones were thus attached to her, which weighed nearly as much as their parent. All the young ones were devoid of down, and of a black color.

From Linnæus we learn, that the female makes no nest for her offspring. She is content with the first hole she finds, where, sticking herself by her hooks against the sides of her apartment, she permits her young ones to hang at the nipple, and in this manner continues

for the first or second day. When, after some time, she begins to grow hungry, and finds it necessary to go abroad in search of food, she takes her little ones off and sticks them to the wall, in the same manner that she had herself before hung: there they immovably cling, and patiently wait her return.

Bats, it is said, may be caught by throwing into the air heads of burdock, whitened with flower: either mistaking these for prey, or dashing casually against them, they are caught by the hooked prickles, and brought to the ground.

THE COMMON BAT.

THE COMMON BAT.

The Common Bat is about the size of a small mouse, and measures nearly nine inches from tip to tip of its wings. The ears are short, and have each a small inner valve. The eyes are very minute. The

color of the fur is somewhat that of the common mouse, with a slightly reddish tinge.

NOCTULE BAT.

The length of the Noctule Bat is about five and a half inches to the tip of the tail, and the breadth of the expanded membranes is fourteen and a half inches. The ears are short, broad, and rounded; and the inner valves small. The fur is nearly of a chesnut color.

BARBASTELLE BAT.

The Barbastelle Bat is somewhat larger than the two first species. On the muzzle there is a naked, hollow, or sunken mark. The ears are large, and so broad that their inner edges touch each other over the nose. The inner valves are conspicuous. The color of the fur is a blackish brown.

HORSE-SHOE BAT.

The length of the Horse-shoe Bat is three and a half inches to the tip of the tail, and the breadth of the expanded membranes about fourteen inches. On the face there is a pointed membraneous appendage, somewhat in the form of a horse's shoe, which surrounds the nose and upper lip. The ears are about the length of the head, sharp-pointed, and have no inner valves. The fur is of a deep cinereous color on the upper parts, and whitish below.

THE VAMPIRE BAT.

VAMPIRE BAT.

The usual length of the Vampire Bat is from nine inches to a foot, and the extent of its wings is sometimes four feet and upwards. Its general color is a deep reddish brown. The head is shaped somewhat like that of a fox. The nose is sharp and black; and the tongue pointed, and terminated by sharp prickles. The ears are naked, blackish, and pointed; and the membranes of the wings are similar in color to those of the Common Bat.

This animal is a native of Guinea, of Madagascar, and of other islands in the Indian Ocean.

The specific denomination of Vampire has been given by naturalists to this tremendous species of Bat, from the circumstance of its reputed propensity to suck the blood of men and animals during their sleep. There is, however, reason to imagine that this thirst for blood is not confined to a single species, but that it is common to several of the large kind of Bats, which are inhabitants of hot climates.

We are informed that the Bats of Java seldom fail to attack such persons as lie in the open air with their extremities uncovered; and that persons thus attacked, have sometimes nearly passed from sleep to death. It is stated that the Bats are so dexterous in this operation, that they can insinuate their aculeated tongue into a vein, and continue to draw the blood, without being perceived; and that, during all the time they are thus engaged, they agitate the air with their wings in so pleasing a manner, as to throw the sufferer into a still sounder sleep than he was before. Notwithstanding this propensity for blood, it is asserted that they also subsist on the juices of different kinds of fruit; and that, in particular, they are so partial to the juice of the palm-tree, that they will sometimes intoxicate themselves with it, until they fall senseless to the ground.

During the day-time these animals lie concealed in the hollows of decayed trees, or suspend themselves to the branches by their claws; and toward the close of evening they issue forth in flights, even more numerous than those of crows in Europe. We are informed by Finch, in his quaint style of writing, that "they hang to the boughs of trees near Surat, in the East Indies, in such vast clusters, as would surprise a man to see; and the noise and squealing they make is so intolerable, that 'twere a good deed to bring two or three pieces of ordnance, and scour the trees, that the country might be rid of such a plague as they are to it." In a small island, one of the Philippines, Dampier tells us that he saw an incredible number of Bats, so large that none of his company could reach from tip to tip of their wings. In the evening, as soon as the sun was set, he says these animals used to take their flight in swarms, like bees, to a neighboring island: and that they were seen to continue in immense numbers till darkness rendered them no longer visible. The whole of the time from daybreak in the morning till sunrise, they occupied in returning to their former place; and this course they constantly pursued all the time the ship was stationed off that island.

At Rose Hill, near Port Jackson, in New Holland, it is supposed that more than *twenty thousand* of these animals were seen within the space of a mile. Some that were caught alive would almost immediately afterwards eat boiled rice and other food from the hand; and in a few days became as domestic as if they had been bred in the house. Governor Philip had a female, which would hang by one leg a whole day without changing its position, and in that pendant situation, with its breast neatly covered with one of its wings, would eat whatever was offered to it, lapping from the hand like a cat. Vampire Bats have sometimes been brought alive into England; but

they are so tender that they do not long survive the chilly temperature of our climate.

The smell of these creatures is more rank and powerful than that of a fox; yet the Indians eat them, and declare their flesh to be excellent food. They become excessively fat at certain times of the year, and it is then that they are said to be the most delicious. The French who reside in the Isle of Bourbon, boil them in their soup, *to give it a relish!*

In New Caledonia the natives use the hair of these animals in the making of ropes, and for the tassels of their clubs; interweaving it with the threads of *Cyperus squarrosus.*

THE SPECTRE BAT.

SPECTRE BAT.

The length of the Spectre is about six inches; and the extent of its wings two feet. On the nose there is an upright, pointed, lanceolate and funnel-shaped membrane. The color of the fur is cinereous. The ears and wing-membranes are naked and blackish.

In no material respect do the habits and economy of these animals, natives chiefly of South America, and of some of the islands in the Pacific Ocean, appear to differ from those of the species last described. Their thirst for blood has been distinctly ascertained by numerous travellers. M. de Condamine says respecting them, that "the Bats which suck the blood of horses, mules, and even of men, when not guarded against by sleeping under the shelter of a pavilion, are a scourge to most of the hot countries of America." At Borja, and several other places, he states, that they had destroyed even the great cattle which had been introduced there by the missionaries.

Captain Stedman, whilst sleeping in the open air in Surinam, was attacked by one of these bats. On awaking about four o'clock in the morning, he was extremely alarmed to find himself weltering in congealed blood, and without feeling any pain. Having started up, he ran to the surgeon, with a fire-brand in his hand, and all over besmeared with gore. The cause of his alarm was however soon explained. After he had applied some tobacco-ashes to the wound, and had washed the gore from himself and his hammock, he examined the place where he had lain, and observed several small heaps of congealed blood upon the ground; on examining which the surgeon judged that he had lost at least twelve or fourteen ounces. Captain Stedman says that these animals, knowing by instinct that the person they intend to attack is in a sound slumber, they generally alight

near the feet, where, while the creature continues fanning with his enormous wings, which keep the person cool, he bites a piece out of the tip of the great toe, so very small that the head of a pin could scarcely be received into the wound, and which is consequently not painful. Yet through this orifice he sucks the blood, until he is obliged to disgorge. He then begins again, and thus continues sucking and disgorging until he is scarcely able to fly; and the sufferer has often been known to sleep from time into eternity. The Spectre Bats generally bite in the ear, but always in places where the blood flows spontaneously.

These animals, it is said, will frequently hang to one another in vast clusters like swarms of bees. Mr. Foster assures us that he has seen at least five hundred of them suspended, some by their fore, and others by their hind legs, in a large tree, in one of the Friendly Islands.

THE LONG-EARED BAT.

The long-eared bat is found in most parts of Europe, and is common in England. It may be seen any warm evening flying about in search of insects, and uttering its peculiar shrill cry. It is very common on Hampstead Heath. The ears are about an inch and a half in length, and have a fold in them reaching almost to the lips, from which peculiarity the genus is called Plecotus.

LONG EARED-BAT.

This bat is very easily tamed, and will take flies and other insects from the hand. One that I had in my own possession used to hang by the wing-hooks during the whole of the day, and could hardly be persuaded to move, or even to eat; but when the evening came on, it became very brisk indeed, and after carefully combing itself with its hind feet, it would eagerly seize a fly or beetle and devour it, always rejecting the head, legs, and wings. It was then very impatient to be released from the cage, and would show its uneasiness by clinging about the cage and fluttering its wings. It unfortunately died before further investigations could be made, but during the short time that it survived, it seemed very gentle, and only bit me once, although I used frequently to handle it.

The singular appearance of the hair of the Bat as seen through a microscope is caused by a number of scales adhering to the exterior of the hair. These scales can be rubbed off, and in consequence of this property, the bat's hair often assumes very singular forms. The hair that is figured was drawn by means of the Camera Lucida, from a specimen seen by transmitted light, but if it had been seen by

reflected light it would have presented quite a different appearance, not very unlike the plant called Mare's tail before its leaves are grown.

The details of the hair are different in the differing species of Bats, but there is always a character about them which is not to be mistaken.

When the Long-eared Bat is suspended by its hinder claws it assumes a most singular aspect. The beautiful long ears are tucked under its wings, which envelop great part of its body. The tragus, that pointed membrane visible inside the ear, is then exposed, and appears to be the actual ear itself, giving the creature a totally different cast of character.

SPLENDID HORSE-SHOE BAT.

SPLENDID HORSE-SHOE BAT.

This is a rare and fine Javanese species, *Kebblek* of the natives described by Doctor Horsefield. The nasal apparatus consists of a broad membrane stretching across the nose. Its color is pure brown above, variegated with grey beneath. Fur long and silky. Body four inches in length. Expansion nineteen inches and a half.

GREATER JAVELIN BAT.

GREATER JAVELIN BAT.

This species has four cutting teeth above and four below, and its canine teeth are very strong. On its nose are two crests, one formed like a leaf or javelin head and the other like a horse-shoe. The ears are large and the tongue bristled with papillæ.

AMBOYNA BAT.

AMBOYNA BAT.

This species has a small nail, or what naturalists call the index wing finger, a conical head, short ears, tail absent or rudimentary, and the membrane between the thighs very little developed.

THE KALONG.

KALONG BAT.

This is the largest species known, the expansion of its wings being five feet. The upper part of its neck is musky red, the rest of the fur blackish, with scattering white hairs on the back. It is found in the low grounds of Java, always in flocks. They hang motionless upon the branches of trees during the day. In the night they commit great ravages on the gardens and plantations of fruit. Their flight is slow and steady. The Javanese amuse themselves with shooting the Kalongs on moonlight nights.

BRUTA.

The animals belonging to this order have no front-teeth in either jaw. Their feet are armed with strong, blunt, and hoof-like nails. Their form is in appearance clumsy, and their pace somewhat slow. No animals belonging to this order are natives of Europe.

OF THE SLOTHS IN GENERAL.

The Sloths have no cutting teeth in either jaw; the canine-teeth are obtuse; and there are five grinders on each side. Their fore-legs are much longer than the hind ones; and the body is covered with hair, and not with scales, as in the Armadillo, and Manis.

All the species which constitute the present tribe are unparalleled in the rest of the animal creation, for slowness and inactivity. Their feet are furnished with strong hooked claws, to enable them to climb into trees, where their voracity leads them to devour both the leaves and fruit. Their eyes are languid and heavy, and their whole countenance expresses so much misery, that no one can look upon them without pity. Their teats are seated on the breast; and, in two of the species, it is a remarkable circumstance, that instead of distinct excretory apertures, there is but one common canal, as in birds.

Only three species of Sloth have hitherto been discovered, two of which are found chiefly in South America.

THE THREE-TOED SLOTH.

In its general appearance this animal is extremely uncouth. The body is thick, the fore-legs are short, and the hinder ones far longer. The feet are small, but armed with three excessively strong and large claws, of a curved form, and sharp-pointed. The head is round, and the face short and naked. The eyes are small, black and round. The hair on the top of the head projects over, and gives to the animal a very peculiar and grotesque physiognomy. Its general color is a greyish brown; and the hair is long and coarse, covering the body, particularly about the back and thighs, very thickly

THREE-TOED SLOTH.

SLOTHS.

Of the three-toed Sloth there is extant a very curious, though often-quoted account, written by Kircher, principally from the authority of a Provincial of the Jesuits, who had been resident in South America, and who, having at different times had several of these animals in his possession, had tried several experiments with them relative to their nature and properties. The figure of the three-toed Sloth, is (he says) extraordinary. This animal is about the size of a cat, has a very ugly countenance, and has its claws extended like fingers. It lives generally on the tops of trees; and if these be at all lofty, it sometimes occupies two whole days in crawling up, and as many in getting down again. Providence has doubly guarded it against its enemies; first, by giving it such strength in its feet, that whatever it seizes it holds with astonishing tenacity: secondly, in having given it such an affecting countenance, that, when it looks at any one who might be tempted to do it an injury, it is almost impossible not to be moved with compassion: it also sheds tears, and upon the whole persuades one that a creature so defenceless and so abject ought not to be tormented.

The Provincial had one of these animals brought to the Jesuits' College at Carthagena. He put a long pole under its feet; this it seized very firmly, and would not let go again. The animal, thus voluntarily suspended, was placed between two beams, and there remained without food for forty days, its eyes being always fixed on those who looked at it. At length it was taken down, and, with great cruelty, a dog was let loose on it. This dog, the Sloth seized in its claws, and held fast until both the animals died of hunger.

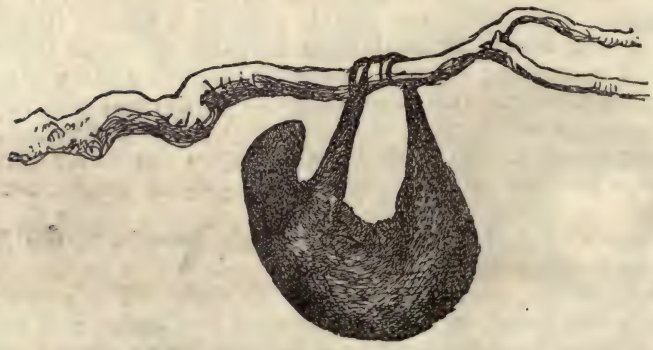
In ascending the trees, the Sloth first stretches one of its paws, and fixes its long claw as high as it can reach. It then heavily raises its body, and gradually fixes the other paw; and in this manner con-

tinues to climb, every motion being incredibly slow and languid. When the Sloth once gets into a tree, we are told that it will not descend while a leaf or bud is remaining; and, in order to save the slow and laborious descent which it would otherwise be obliged to make, it sometimes suffers itself to fall to the ground, its tough skin, and thick, coarse hair, sufficiently securing it from injury. Occasionally the Sloths will suspend themselves by their claws from the branches of trees, and, thus hanging, a branch may be cut off, and they will fall with it rather than quit their hold. A Sloth that was taken by some person who went out in the expedition under Woodes Rogers, was brought on board the ship, and put down at the lower part of the mizen shrouds. It climbed to the mast-head; but occupied two hours in what a monkey would have performed in less than half a minute. It proceeded with a very slow and deliberate pace, as if all its movements had been directed by machinery.

These animals are always most active during the night, at which time they utter their plaintive cry, ascending and descending in perfect tune, through the hexachord, or six successive musical intervals. When the Spaniards first arrived in America, and heard this unusual noise, they fancied they were near some nation, the people of which had been instructed in European music.

When kept in a house, the Sloth never rests on the ground, but always climbs upon some post or door to repose. If a pole be held out to one of these animals when on the ground, it will immediately lay hold of it; and, if these be afterwards fixed upright, will climb to the top, and there firmly adhere.

THE TWO-TOED SLOTH.



TWO-TOED SLOTH.

The two-toed Sloth is considerably larger than the preceding species, and differs from it principally in having only two claws, on each of its fore-feet.

It is a native of Ceylon and the East Indies.

This animal, although heavy and excessively awkward in its mo

tions, has sufficient activity to ascend into and descend from the loftiest trees, several times in the course of a day. Like the last species, he is chiefly alert in the evenings and during the night.

The Marquis de Montmirail, some years ago, purchased one of these animals at Amsterdam. It had been fed with sea-biscuit, but he was told, that, as soon as the winter was over, and the verdure began to appear, it would require nothing but leaves. The creature was consequently supplied with leaves. These he ate freely while they were green and tender; but the moment they began to be dry, shrivelled, or worm-eaten, he refused them. During the three years that the marquis had him, his common food was bread, apples, roots, and milk; but he was so heavy and inanimate, that he did not even recognize the hand that fed him.

The most natural position of this animal, and which he preferred to all others, was that of suspending himself on the branch of a tree, with his body downward. He sometimes even slept in this position, his fore-claws fastened nearly on the same point, and his body describing the figure of a bow. The strength of his muscles was almost incredible; but this became useless to him when he walked.

OF THE ANT-EATERS IN GENERAL.

The Ant-eaters, as they subsist entirely on insects, have no teeth. Their tongue which is long worm-like and covered with a kind of glutinous moisture, is the only instrument by which they seize their food. Instead of teeth, they have, however, certain bones, not unlike teeth, that are situated deep in the mouth, near the entrance of the gullet. The mouths of the whole tribe are lengthened into a somewhat tubular form.

THE GREAT ANT-EATER.

GREAT ANT-EATERS.

The body of the Great Ant-eater is covered with exceedingly coarse and shaggy hair. Its head is very long and slender, and the mouth but just large enough to admit its tongue, which is cylindrical, nearly two feet in length, and lies folded double within it. The tail is of enormous size, and covered with long, black hair, somewhat like the tail of a horse. The whole animal, from the end of the snout to the tip of the tail, is sometimes eight or nine feet in length.

GREAT ANT-EATERS IN QUEST OF FOOD.

The food of this very singular animal consists principally of Ants, and these he obtains in the following manner. When he comes to an Ant-hill, he scratches it up with his long claws, and then unfolds his slender tongue, which much resembles an enormously long worm. This being covered with a clammy matter or saliva, the Ants adhere to it in great numbers: then, by drawing it into his mouth, he swallows thousands of them alive; and he repeats the operation till no more are to be found. He also tears up the nests of wood-lice, which he in like manner discovers; and frequently climbs trees in quest of these insects, and of wild bees or their honey. But should he meet with little success, in his pursuit of food, he is able to fast for a considerable time, without inconvenience.

The motions of the Ant-eater are in general very slow. He, however, swims over great rivers with sufficient ease; and, on these occasions, his tail is always thrown over his back. With this extraordinary member, when asleep, or during heavy showers of rain, the animal also covers its back; but at other times he trails it along, and sweeps the ground.

It is said that these animals are tameable, and that, in a domestic state, they will pick up crumbs of bread, and small pieces of flesh. They are natives of Brazil and Guiana. The females have one young-one at a birth; and this does not arrive at maturity till it is four years old.

When on the ground, the Ant-eater moves with much apparent awkwardness, always resting on the heel of its long feet. But it is able to climb with great ease. Though destitute of teeth, and generally inclined to shun contention, yet, when it is attacked, and its passions are roused, it is a fierce and dangerous antagonist. If it can once seize its enemy within the grasp of its fore-feet, it fixes the claws into his sides, and both fall together; and it frequently

happens that both perish; for the perseverance of the Ant-eater is so obstinate, that it will not extricate itself even from a dead adversary.

Such is its strength, that even the panthers of America are often unequal to it in combat.

OF THE MANIS TRIBE.

These animals have no teeth. Their mouth is long and tubular, and the tongue cylindrical and extensile. The body is covered on the upper parts with scales; and, beneath, it is either naked or clad with hair.

In their general appearance, these animals greatly resemble the lizards. Their form, and the scales with which all the upper parts of their body are covered, would induce a casual observer to believe that they were really allied to the reptile tribes. This, however, is by no means the case; they are truly mammiferous animals, bringing forth living offspring, and nourishing them in the same manner as other quadrupeds.

THE LONG-TAILED MANIS.

This animal is very long and slender. It sometimes measures nearly five feet in length, from the tip of its nose to the extremity of the tail. All the upper parts of its body and tail are covered with broad, but sharp-pointed scales, of a deep brown color, with a glossy or polished surface. The under parts are clad with hair. On each of the feet there are four toes.

LONG TAILED MANIS.

THE SHORT-TAILED MANIS.

The short-tailed Manis is much thicker in proportion to its length than the last species: the tail also is considerably shorter; and on each of the feet there are five toes. This animal sometimes grows to the length of six feet and upwards.

The scales with which the bodies of these extraordinary creatures are covered, are not attached to the skin by their whole under surface, but only by their lower extremity; and thus, like the quills of the porcupine, they are moveable at pleasure. When exasperated, the animals erect them; and when attacked, they roll themselves into a ball, and present to their enemy a surface armed on every side. The scales are sharp at the points, and of a substance so hard, that, on collision, they will strike fire like flint.

To escape from their foes by swiftness of foot would be utterly impracticable; and their Creator has not endowed them with powers for offensive resistance; but, when they thus act on the defensive, no animal whatever is able to overcome them. The tiger and panther may tread upon, may roll them about, and attempt to devour them; but all their efforts are vain, and where they expected an easy prey they find only weapons which wound them in every attempt to obtain it. Of all the quadrupeds, without excepting even the porcupine, the armor of the Manis is the strongest, and at the same time the most defensive.

The mode in which these animals feed, is similar to that of the Ant-eaters. Their tongue, which is long, cylindrical, and covered with a viscous fluid, is the instrument by which their subsistence is derived. They lie down in places frequented by insects; and extending their tongue upon the ground, the insects are attracted by the moisture, and eagerly run upon it in great numbers. When the animal finds that it is sufficiently covered, he suddenly withdraws it and swallows its prey.

Both the species of Manis are natives of Africa and the East Indies. The Negroes eat their flesh, which is white, and considered by them as delicate food. The scales are used for various purposes.

OF THE ARMADILLO TRIBE.

These animals are destitute both of cutting and canine teeth; but they have several grinders. They are distinguished from each other by the number of flexible bands of which their shell is composed.

Instead of hair, the body of the Armadillo is covered with a kind of plate armor. And as in its structure, the Manis reminds us of the lizards, so the shell with which the Armadillo is clad, presents us with at least a distant resemblance of the tortoise. These are inoffensive animals. They are natives almost exclusively of the New Continent: they live in burrows or holes which they form in the ground; and feed on roots, fruit, vegetables, and insects.

THE THREE-BANDED ARMADILLO.

THREE BANDED ARMADILLO.

The Three-banded Armadillo is about twelve inches long, and eight broad, exclusive of the tail, which is two inches in length. The body is nearly covered with a shell: this, on the shoulders and rump, consists of five cornered pieces, very regularly arranged; and round the body are three belts of shell, composed of square or oblong pieces, having on each several scales of a yellowish white color. All the pieces of this armor are connected by a membrane, like the joints in the tail of a lobster; and they slide so easily over each other, as to allow of free motion to the limbs.

When the Armadillo is in danger of being attacked by its enemies, it rolls itself up in the manner of the hedge-hog, withdrawing its head, tail, and legs; and, except its nose, leaving nothing but the shell in view. In this position it sometimes resembles a large ball, flattened at the sides; and, thus defended, it continues till the danger is past, and frequently for a long time afterwards. If the animal happen to be near a precipice, it will sometimes roll itself over; and in this case, says Molina, in his natural history of Chili, it generally falls to the bottom unhurt.

These creatures, like swine, root up the earth in search of food. They live in burrows, which they dig in the ground, and which they seldom quit, except during the night. Although they are natives of the hot climates of America, they will live in temperate regions. M. de Buffon saw one in Languedoc, which was fed in the house, and went about every where without doing any mischief.

The Armadillos walk quickly, but they can neither leap, run nor climb into trees; so that they cannot escape those who pursue them. In case of pursuit, they have seldom any resource except to hide themselves in their holes; but, if these be at too great a distance, they dig a hole before they are overtaken. And such is the strength of their snout and the claws of their fore-feet, that in a few moments they are able to conceal themselves. Sometimes, however, before they can become quite concealed, they are caught by the tail; and then they resist so powerfully, that the tail often breaks short off, and is left in the hands of the pursuers. To avoid this the hunter has recourse to artifice; and, by tickling the animal with a stick, it loses its hold, and suffers itself to be taken without further trouble. When caught, the Armadillo rolls itself into a ball, and will not again extend itself unless placed near the fire.

These animals are hunted with small dogs, which are trained by the Indians for this purpose. The hunters know when they are concealed in their holes, by the number of flies which then hover round; and their usual mode of forcing them out is by smoking the burrows, or pouring in water. If they begin to dig, the animal digs also; and, by throwing the earth behind it, so effectually closes up the hole, that the smoke cannot penetrate.

The females of this species are very prolific. They breed three or four times in a year, and produce several young ones at a birth. The Indians are extremely partial to the flesh of Armadillos as food; and they apply the shells to various uses. Chiefly, however, they paint them of different colors, and make them into baskets, boxes, and other small utensils.

SIX BANDED ARMADILLO.

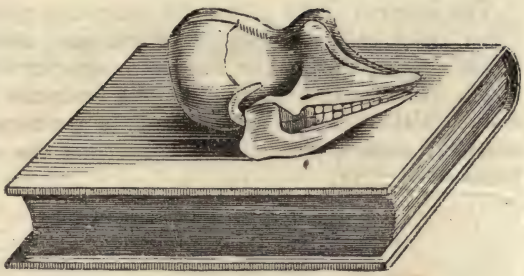
The six banded Armadillo is found in Paraguay.

PECICIAGO

This is a South American variety, well delineated in the Engraving. It is called by naturalists the Chlamyphorus Truncatus, from the abrupt manner in which its hinder part terminates. It is found in Chili, burrowing in the rich soil of the valleys, living chiefly under ground. It appears to subsist on insects which it captures in the night.

Few animals with which we are acquainted are better qualified for a subterranean mode of life, or better furnished with the means of "progressing" through the soil, or forming galleries and chambers. The top of the head, and the whole of the upper surface of the body, are covered with a thin shell of a consistence between horn and leather, divided, by intersecting furrows, into a series of bands or strips, each strip being itself made up of fifteen or twenty plates of a square form, except on the head, which is covered with a single plate composed of a mosaic-work of rounded and irregular portions. This horny covering or shield is not fixed by the whole of its inferior surface to the integuments beneath, as is the case with the armadillo, but merely rests on the back, free throughout, "excepting along the spine of the back and top of the head; being attached to the back, immediately above the spine, by a loose cuticular production, and by two remarkable bony processes on the top of the *os frontis* (bone of forehead), by means of two large plates which are nearly incorporated with the bone beneath; but for this attachment, and the tail being firmly curved beneath the belly, the covering would be very easily detached." The extremity of the tail is formed like a paddle. "The whole surface of the body is covered with fine silk like hair, (of a delicate straw color,) longer and finer than that of the mole, but not so thick. The anterior of the chest is large, full, and strong; the anterior extremities short, clumsy, and powerful." The hand, which is amazingly thick and compact, is furnished with five powerful but compressed nails, which, arranged together in their natural situation, constitute one of the most efficient scrapers or shovels which can be possibly imagined; and expressly adapted for progression under ground, but in an equal ratio ill-fitted for celerity on the surface. The hind legs are comparatively weak, the feet being long and somewhat resembling the human; the toes are furnished with small flattened nails. Sight is but a second-rate sense, as it regards its importance in the economy of an animal living in darkness beneath the ground;—the organs of vision, therefore, are almost as little developed as in the mole, being very minute, and buried in the long silky fur; by which the circular orifices of the ears are also equally concealed. The head is almost conical in its figure, going off from a broad base to a pointed snout, furnished with an enlarged cartilage, as in the hog, and doubtless for the same purpose, of grubbing and burrowing for food. In accordance with the details of external configuration the skeleton is equally indicative of the creature's habits. The skull is firm, and prevented from being pressed upon by the shield, which

rests on two solid projections, as seen in the annexed sketch. The bones of the fore limbs are thick, short, and angular; the scapulæ broad and strong; the ribs thick, and capable of resisting great pressure. The hip-bones are of singular construction,



SKULL OF CHLAMYPHORUS.

and admirably formed for protecting the internal organs from injury. Such is an outline of the structure and habits of the chlamyphorus, an animal which, though bearing in some points a close analogy both to the mole and the armadillo, yet possesses characters so exclusively its own, as to render it one of the most interesting and remarkable of modern discoveries in zoology. Of this rare animal two specimens alone exist, one in the Museum of Philadelphia, the other, whose skeleton is perfect, in the Museum of the Zoological Society of London.

ORNITHORHYNCUS.

DUCK-BILLED PLATYPUS.

The Duck-Billed Platypus. —Australia, where everything seems to be reversed; where the north wind is warm and the south wind cold, the thick end of a pear is next the stem, and the stone of a cherry grows outside, is the residence of this most extraordinary animal. When it was first introduced into Europe, it was fully believed to be the manufacture of some imposture, who with much ingenuity had fixed the beak of a duck into the head of some unknown animal.

It lives by the banks of rivers, in which it burrows like the water rat. Curiously enough, it finds no difficulty in this labor, although its house is always very deep, for the feet are so constructed that the animal can fold back the web at pleasure, and thus the foot is enabled to perform its task. It feeds upon water-insects and shell-fish, always rejecting the crushed shells after swallowing the inhabitant.

Mr. Bennet attempted to rear some young Ornithorhynci at Sydney, but they died in a short time. They were fond of climbing between a press and the wall, placing their backs against the press and their feet against the wall. They used to dress their fur with their beak and feet, just as a duck prunes its feathers.

The male has a sharp spur on its hind feet.

The learned have given the animal several names. Some follow Shaw, and call it Platypus Anatinus; some give it the name of Ornithorhyncus rufus or fuscus, or crispus or brevirostris, with other titles. The native name for the creature is "Mullingong," a title which, although not euphonius, is perhaps little less so than the scientific names, while it certainly has the advantage over them in point of brevity.

THE RHINOCEROS TRIBE.

RHINOCEROS.

We now come to a race of animals of huge size and bulk, inhabitants only of tropical climates. They are dull and sluggish in their manners; but in their disposition, they are in general inoffensive and peaceable. They have on the nose a solid, conical horn, not fixed in the bone: this is never shed, but remains during life. Their skin is tuberculated and exceedingly hard, but on the under parts of the body

it is sufficiently tender to be cut through with a knife. The general internal structure of these animals corresponds with what is observed in the horse.

THE SINGLE-HORNED OR COMMON RHINOCEROS.

The length of the Rhinoceros is usually about twelve feet, and this is also nearly the girth of his body. The skin, which is of a blackish color, is disposed, about the neck, into large plaits or folds. A fold of the same kind passes from the shoulders to the fore legs; another from the hind part of the back to the thighs. The skin is naked, rough, and covered with a kind of tubercles, or large callous granulations. Between the folds, and under the belly, it is soft, and of a light rose-color. The ears are moderately large, upright, and pointed. The eyes are small, and so situated that the animal can only see what is nearly in a direct line before him.

The Rhinoceros is a native of India, Ceylon, Java, Sumatra, and several parts of Ethiopia.

The Single-horned Rhinoceros is not exceeded in size by any land animal except the elephant, and in strength and power he gives place to none. His nose is armed with a formidable weapon, a hard and solid horn, sometimes more than three feet in length, and, at the base, eighteen inches in circumference; and with this he is able to defend himself against the attack of every ferocious animal.

The body of the Rhinoceros is defended by a skin so hard as to be impenetrable, except in the under parts by either a knife or spear. It is said, that, even to shoot a full-grown Rhinoceros of advanced age, it is necessary to use iron bullets, as those of lead are sometimes flattened by striking against the skin.

The upper lip of this animal answers, in some measure, the same purpose as the trunk of the elephant. It protrudes over the lower one in the form of a lengthened tip; and, being extremely pliable, is used in catching hold of the branches of trees and shrubs, and delivering them into the mouth.

Although the Rhinoceros is generally of a quiet and inoffensive disposition, yet when this animal is attacked or provoked he becomes extremely dangerous; and he is sometimes subject to paroxysms of fury, which nothing can assuage.

In the year 1743, a Rhinoceros was brought from Bengal into Europe. He was at this time only two years old, and the expense of his food and journey amounted to nearly 1000*l.* sterling. He had every day, at three meals, seven pounds-weight of rice, mixed with three pounds of sugar; besides hay and green plants: he also drank large quantities of water. In his disposition he was sufficiently peaceable, readily permitting all parts of his body to be touched. When he was hungry, or was struck by any person, he became mischievous, and nothing would appease him but food.

Another of these animals which was brought from Atcham, in the dominions of the king of Ava, was exhibited at Paris in the year 1748.

RHINOCEROS PURSUING THE HUNTER.

He was tame, gentle, and even caressing; was fed principally on hay and corn, and was much delighted with sharp or prickly plants, and the thorny branches of trees. The attendants frequently gave him branches that had sharp and strong thorns on them; but he bent and broke them in his mouth without seeming to be in the least incommoded. It is true they sometimes drew blood from the mouth and tongue; "but that," says Father le Compte, who gives us the description, "might even render them the more palatable, and these little wounds might serve only to cause a sensation on the palate similar to that excited by salt, pepper, or mustard on ours."

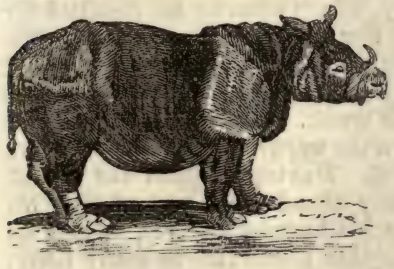
As an equivalent for a very dull sight, the Rhinoceros has a most acute and attentive ear. He has also the power of running with great swiftness; and, from his enormous strength and his impenetrable covering, he is capable of rushing with resistless violence through the woods; the smaller trees bending like twigs as he passes them. In his general habits and manner of feeding the Rhinoceros resembles the elephant: he resides in cool, sequestered spots, near waters, and in shady woods. Like the hog, he delights in occasionally wallowing in the mire.

The flesh of this animal is an article of food in some parts of Ceylon, Java, and Sumatra. The skin, flesh, hoofs, teeth, and even the dung, are each used medicinally. The horn when cut through the middle, is said to exhibit, on each side, the rude figure of a man; the outlines being marked by small white strokes. Many of the Indian princes drink out of cups made of this horn; erroneously imagining that, when these hold any poisonous draught, the liquor will ferment till it runs quite over the top. Martial informs us, that the Roman

ladies of fashion used these horns in the baths, to hold their essence-bottles and oils. The Javanese make shields of the skin.

The only three animals of this species that have been brought into England during the last half century, were all purchased for the exhibition-rooms at Exeter 'Change.—One of them, of which the skin is still preserved, came from Laknaor, in the East Indies, and, in 1790, was brought in the Melville Castle East Indiaman, as a present to Mr. Dundas. This gentleman, however, not wishing, to have the trouble of keeping him, gave the animal away; and not long afterwards he was purchased by Mr. Pidcock, of Exeter' Change, for the sum of 700*l*. This animal exhibited no symptoms of a ferocious propensity, and would even allow himself to be patted on the back and sides by strangers. His docility was about equal to that of a tolerably tractable pig: he would obey the orders of his keeper, to walk about the room and exhibit himself to the numerous spectators who came to visit him. He usually ate, every day, twenty-eight pounds weight of clover, besides about the same weight of ship-biscuit, and a great quantity of greens. This food was invariably seized in his long and projecting upper lip, and by it was conveyed into his mouth. He was allowed also five pails of water twice or thrice a day; and he was fond of sweet wines, of which he would often drink three or four bottles in the course of a few hours. His voice was not much unlike the bleating of a calf. This was generally exerted when he observed any body with fruit, or other favorite food in his hand; and in such cases, it seems to have been a mark of his anxiety to have food given him.

SINGLE-HORNED RHINOCEROS.



In the month of October, 1792, as this Rhinoceros was one day rising up very suddenly, he dislocated the joint of his right fore-leg. This accident brought on an inflammation, which about nine months afterward, occasioned his death. It is a singular fact, that in the first attempts that were made to recover the animal, the incisions which were formed through his thick and tough hide, were invariably found to be healed in the course of twenty-four hours. He died in a caravan, at Corsham, near Portsmouth.

The second Rhinoceros that was at Exeter 'Change was considerably smaller than this, and was likewise a male. It was brought over about the year 1799, and lived not more than twelve months afterward. An agent of the Emperor of Germany purchased it of Mr. Pidcock for 1000*l.*; but it died in a stable-yard in Drury-Lane, after the purchaser had been in possession of it about two months.

The third of these animals I saw at Exeter 'Change in the month of October, 1810. It was kept somewhat more than four years afterward, and then sold to an innkeeper of Ghent for exhibition on the continent.

The females of this species produce only a single young one at a birth.

THE TWO-HORNED RHINOCEROS.

This species differs from the last, principally in the appearance of its skin; which, instead of vast and regularly-marked armor-like folds, has merely a slight wrinkle across the shoulders, and on the hinder parts, and a few fainter wrinkles on the sides: so that, in comparison with the Common Rhinoceros, it appears almost smooth. What, however, constitutes the chief distinction, is the nose being furnished with two horns, one of which is smaller than the other, and situated above it. These horns are loose when the animal is in a quiescent state, but become fixed and immovable when it is enraged. *Shaw.* i. 202.

In their habits and manner of feeding, these animals differ but little from the Single-horned Rhinoceros. M. Le Vaillant informs us that whenever they are at rest they place themselves in the direction of the wind, with their noses toward it, in order to discover by the smell the approach of any enemies. From time to time they move their heads round to look behind them, and to be assured that they are safe on all sides; but they soon return to their former position. When they are irritated, they tear up the ground with their horns; throwing the earth and stones furiously, and to a vast distance over their heads.

The description which has been given by Mr. Bruce of the habits of the Two-horned Rhinoceros is deserving of particular notice. He informs us that "besides the trees that are capable of most resistance, there are, in the vast forests within the rains, trees of a softer consistence, and of succulent quality, which seem to be destined for the principal food of this animal. For the purpose of gaining the highest branches of these, his upper lip is capable of being lengthened out so as to increase his power of laying hold with it, in the same manner as the elephant does with his trunk. With this lip, and the assistance of his tongue, he pulls down the upper branches, which have most leaves, and these he devours first. Having stripped the tree of its branches, he does not immediately abandon it; but placing his snout as low in the trunk as he finds his horns will enter, he rips up the body of the tree and reduces it to thin pieces like so many laths; and, when he has thus prepared it, he embraces as much of it as possible in his monstrous jaws, and twists it round with as much ease as an ox would a root of celery, or any small plant."

When pursued and in fear, he moves with astonishing swiftness, considering his size, the apparent unwieldiness of his body, his great weight before, and the shortness of his legs. It is not, however, true that, in a plain, his pace is more rapid than that of a horse; for Mr. Bruce has often passed these animals with ease, and seen other persons worse mounted than himself, do the same; but by his cunning he is often able to elude pursuit. He makes constantly from wood to wood, and forces himself into the thickest parts of the forest. The trees that are dead or dry, are broken down, as if with a cannon-shot, and fall behind and on each side of him, in all directions. Others that are more pliable, greener or fuller of sap, are bent back by his weight, and by the velocity of his motions. And, after he has passed, they restore themselves, like a green branch, to their natural position, and often sweep the incautious pursuer and his horse from the ground, and dash them in pieces against the surrounding trees.

The eyes of the Rhinoceros are very small; he seldom turns his head, and therefore sees nothing but what is before him.* It is to this that he owes his death, and he never escapes if there be so much plain as to enable the horses of the hunters to get before him. His pride and fury then make him lay aside all thoughts of escaping, except by victory over his enemy. He stands for a moment at bay: then at a start, runs straight forward at the horse which is nearest to him. The rider easily avoids the attack by turning short to one side. This is the fatal instant: a naked man who is mounted behind the the principal horseman, drops off the horse, and, unseen by the Rhinoceros, gives him, with a sword, a stroke across the tendon of the heel, which renders him incapable either of flight or resistance.

These animals frequent wet and marshy situations; but large, fierce, and strong as they are, they suffer great torment, from an apparently contemptible adversary. This is a fly, (probably of the Linnean genus *œstrus*,) which is bred in the black earth of the marshes in Abyssinia. It persecutes the Rhinoceros so unremittingly, that it would in a short time subdue him, but for a stratagem which he practices for his preservation. In the night, when the fly is at rest, the huge animal chooses a convenient place, where, rolling in the mud, he clothes himself in a kind of case, which defends him

TWO-HORNED RHINOCEROS.

* The account of Mr. Bruce differs in this particular, from that of M. Le Vaillant, before quoted.

WHITE RHINOCEROS.

against his adversary the following day: the wrinkles and plaits of his skin serve to keep this muddy plaister firm upon every part of his body, except the hips, shoulders, and legs. Here it cracks and falls off, by his motion, and leaves him exposed, in those parts, to the attacks of the fly. The itching and pain which follows, occasion him to rub himself with great violence against the roughest trees he can find.

The skin of this Rhinoceros is not so hard or impenetrable as that of the last species. In his wild state he is often slain by javelins thrown from the hand, some of which enter his body to a great depth. A musket-shot will go through him unless interrupted by a bone; and the inhabitants of Shangalla kill these animals by the clumsiest arrows that ever were used, and afterwards cut him to pieces with the very worst of knives.

In order to afford some idea of the enormous strength of this Rhinoceros, I shall quote Mr. Bruce's account of the hunting of this animal in Abyssinia. "We were on horseback (says this gentleman) by dawn of day, in search of the Rhinoceros, many of which we had heard making a very deep groan and cry as the morning approached. Several of the Agageers, or hunters, then joined us; and after we had searched about an hour in the very thickest part of the wood, a Rhinoceros rushed out with great violence, and crossed the plain towards a wood of canes that was about two miles distant. But though he ran, or rather trotted, with surprising speed, considering his bulk, he was, in a short time, transfixed with thirty or forty javelins. This attack so confounded him, that he left his purpose of going to the wood, and ran into a deep hole, or ravine, without outlet, breaking above a dozen of the javelins as he entered. Here we thought he was caught as in a trap, for he had scarcely room to turn; and a servant, who had a gun, standing directly over him, fired at his head, and the animal fell immediately, to all appearance, dead. All those on foot now jumped in with their knives to cut him up; but they had scarcely begun,

THE WOUNDED RHINOCEROS

when the animal recovered so far as to rise upon his knees: happy then was the man that escaped first; and had not one of the Agageers, who was himself engaged in the ravine, cut the sinew of the hind leg as he was retreating, there would have been a very sorrowful account of the foot-hunters that day."

It is a remarkable fact, that the cavity which contained the brain of one of these huge animals, was so small as to be only six inches long and four deep; and, being filled with peas, was found to contain barely a quart: while a human skull, measured at the same time, took above two quarts to fill it.

The Hottentots, and even some of the colonists of the Cape of Good Hope, set a high value on the dried blood of the Rhinoceros. They ascribe to it great virtues in the cure of many disorders of the body. The flesh is eatable, but it is full of sinews.

RHINOCEROS ATTACKING ELEPHANTS.

THE ELEPHANT TRIBE.

THESE animals have no front teeth in either jaw; but from the upper jaw there proceed two long tusks, which, in a state of nature, are chiefly employed in tearing up trees for food, and as weapons of defence against their enemies. They have a long, cartilaginous, prehensile trunk, which is capable of laying hold even of the most minute substances. Their body is thinly scattered over with hairs. No more than *one* species has hitherto been ascertained.

THE ELEPHANT.

AFRICAN ELEPHANT.

The Elephant is undoubtedly the largest of all terrestrial animals. It sometimes attains the height of twelve feet; though its more general height seems to be from nine to ten feet. The skin is usually of a deep ash-color. The tusks in a full-grown male Elephant sometimes extend ten feet from the sockets; but those of the females are short. The eyes are extremely small, and the ears large and pendulous. The head is large, the back much arched, the legs extremely thick, and the feet divided into, or rather edged with, five rounded hoofs. The tail is terminated by a few scattered and very thick black hairs. The teats of the females are two, seated at a small distance behind the fore-legs.

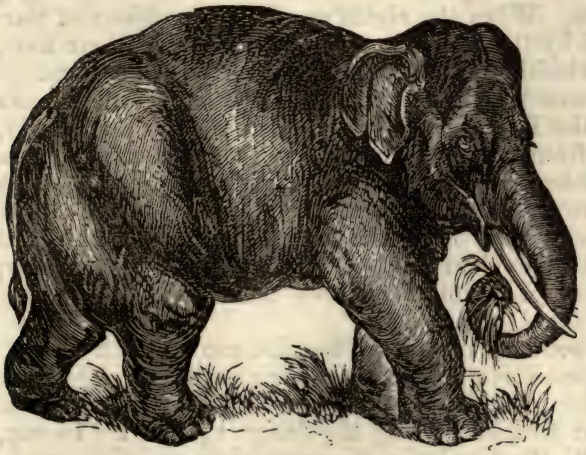
There is scarcely any animal in the creation that has, at different times, occupied so much the attention of mankind as the elephant. Formed in a peculiar manner for the service of man in the hot climates, he is endowed with every requisite to usefulness. He is strong, active, and laborious; and such are his mildness and sagacity, that he can be trained to almost any service which a brute is capable of performing.

Elephants are found wild, and generally in large troops, in the shady woods of Asia and Africa. They feed on vegetables, on the young shoots of trees, on grain, and fruit; and they are probably the longest lived of any quadrupeds; for they sometimes attain the great

age of a hundred or a hundred and twenty years. This circumstance alone would induce us to suppose that they could not be very prolific, as in such case the countries which they inhabit would soon be overstocked, and consequently devastated by them. The females seldom produce more than a single young-one at a birth. This, when first born, is about the size of a large dog; and it does not attain its full growth until it is sixteen or eighteen years old.

In the structure of the Elephant, the most singular organ is the trunk or proboscis. This, which is an extension of the canals of the nose, is very long, composed of a great number of cartilaginous rings, and divided in the inside through its whole length.—At the lower end it is furnished with a kind of moveable finger; and it is so strong as to be capable of breaking off large branches from trees. Through this the animal smells and breathes; and by means of it, he conveys food to his mouth. The sense of smelling the elephant enjoys in such perfection, that if several people be standing around him, he will discover food in the pocket of any one present, and take it out by his proboscis with great dexterity. With this he can untie the knots of ropes, and open and shut gates by turning the keys or pushing back the bolts, and pick up even the smallest bodies from the ground. It is, in short, one of the most useful and extraordinary instruments that the wisdom of Providence has bestowed on any species of animal.

YOUNG ELEPHANT.



CEYLON ELEPHANT.

The disposition of these animals is gentle, and their manners are social, for they are seldom seen wandering alone.—They generally march in troops, the oldest keeping fore-

most, and the next in age bringing up the rear. The young and the feeble occupy the middle. The mothers carry their young ones firmly embraced in their trunks. They do not, however, observe this order, except in perilous marches, when they are desirous of pasturing on cultivated fields. In the deserts and forests, they travel with less caution, but without separating so far as to exceed the possibility of receiving assistance from one another.

The wild Elephants of Ceylon live in troops or families, distinct from all others, and seem to avoid the strange herds with particular care. When a family removes from place to place, the largest-tusked males place themselves at the head, and if they come to a river they are the first to pass it. On arriving at the opposite bank, they try whether the landing place is good; if it be, they give a signal with their trunk, when another division of the old Elephants swim over: the young then follow, holding one another by locking their trunks together; and the rest of the old ones bring up the rear.

MODE OF CAPTURING ELEPHANTS.

The modes of taking this animal, and rendering it submissive to human authority, merit particular attention. At Tepura, in the East Indies, when the inhabitants are desirous of securing the wild male Elephants, they do it by means of Koomkees, or female Elephants, trained for the purpose. As the hunters know the places where the Elephants come out to feed, they advance towards them in the evening with four Koomkees. When the nights are dark, the objects of pursuit are discovered by the noise they make in cleaning their food, which they do by whisking and striking it against their fore-legs.

As soon as the hunters have determined on the animal they mean to secure, three of the Koomkees are conducted silently and slowly, at a little distance from each other, nearly to the place where he is feeding. The Koomkees advance cautiously, feeding as they go along. When the male perceives them approaching, if he takes the alarm, and is viciously inclined, he beats the ground with his trunk, and makes a noise, showing evident marks of displeasure. This, however, is not often the case: he generally allows them to approach, and sometimes even advances to meet them.

The drivers now conduct two of the females, one on each side of him: these close themselves gently against his neck and shoulders; the third female then comes up, and places herself across his tail. In this situation, far from suspecting any design against his liberty, he begins to toy with the females, and caresses them with his trunk.

While thus engaged, the fourth female is brought near, attended by proper assistants, who immediately get under the body of the animal, and put a slight rope round his hind-legs. If he take no notice of this slight confinement, the hunters proceed to tie his legs with a stronger rope; which is passed alternately, by means of a forked stick, and a kind of hook, from one leg to the other, in the form of a figure of 8. Six or eight of these ropes are generally employed one above another; and they are fastened at their intersections by another rope, that is made to pass perpendicularly up and down. A strong cable, with a running noose, is next put round each hind leg, above the other ropes; and afterward six or eight ropes are crossed from leg to leg above the cable. The fixing of these ropes usually occupies about twenty minutes, during which time the utmost silence is observed.

When thus secured, the animal is left to himself, the Koomkees retiring to a little distance. He attempts to follow them, but finding his legs tied, and becoming sensible of the danger of his situation, he immediately retreats toward the jungle. The drivers mounted on tame Elephants, and accompanied by several persons, who till this time have been kept out of sight, follow him at a little distance; and as soon as he passes near a tree sufficiently stout to hold him, they make a few turns, round the trunks of the trees, with the long cables which trailed behind him. His progress being thus stopped, he becomes furious, and exerts his utmost efforts to disengage himself. The Koomkees dare not now approach him; and, in his fury, he falls down on the earth and tears it up with his tusks. When he has exhausted himself, the Koomkees are again brought near and take their former positions. After getting him nearer the tree, the people carry the ends of the long cables two or three times round it, so as to prevent the possibility of his escape. His fore-legs are now tied in the same manner as his hind-legs were. The cables are made fast, one on each side, to trees or stakes driven deep into the earth; and he is subsequently fastened, by means of other ropes, to two Koomkees, one on each side.

Every thing being now ready, and a passage being cleared from the jungle, all the ropes, except one, are taken from his legs. The Koomkees pull him forward; sometimes, however, not without much struggling and violence on his part. When brought to his proper station, and made fast, he is treated with a mixture of severity and gentleness; and, generally, in a few months he becomes tractable, and appears perfectly reconciled to his fate. It seems somewhat extraordinary, that though the animal uses his utmost force to disengage himself when taken, and would kill any person who came within his reach, yet he seldom attempts to injure the females that have ensnared him; but, on the contrary, seems, as it were, consoled by them for the loss of his liberty.

The mode of securing a herd of wild Elephants is very different from that adopted in taking a single male, and the process is much more tedious.

When a herd of these animals, which generally consist of from forty to a hundred, is discovered, about five hundred people are employed

HERD OF ELEPHANTS.

to surround it. By means of fire and noises, they, in the course of some days, are able to drive them to the place where they are to be secured. This is called the Kedda. It consists of three enclosures, communicating with each other by means of narrow openings or gateways. The outer one is the largest, the middle generally the next in size, and the third or furthermost the smallest. When the animals arrive near the first enclosure, (the palisadoes and two gates of which are as much as possible disguised by branches of trees and bamboos being stuck in the ground, in order to have the appearance of a natural jungle,) great difficulty attends the business of getting them in. The leader always suspects some snare, and it is not without the utmost hesitation that he passes; but as soon as he enters, all the rest follow. Fires are now lighted round the greatest part of the enclosure, particularly at the entrance, and loud and discordant noises are made for the purpose of urging them on to the next enclosure. The Elephants find themselves entrapped, and discovering no opening except the entrance to the next enclosure, they at length pass it. The gate is instantly shut upon them, fires are lighted, and discordant noises are made as before, till they have passed through another gateway into the last enclosure, where they are secured in a similar manner. Being now completely surrounded, and perceiving no outlet through which they can escape, they appear desperate, and, in their fury, advance frequently to the surrounding ditch, in order to break down the palisade, inflating their trunks, and screaming out aloud: but wherever they make an attack, they are opposed by lighted fires, and

by the noise and triumphant shouts of the hunters. The ditch is then filled with water; and, after a while, they have recourse to it in order to quench their thirst and cool themselves, which they do by drawing the water into their trunks, and then squirting it over every part of their bodies.

When the Elephants have continued in the enclosure a few days, where they are regularly, though scantily, fed from a scaffold on the outside, the door of the Roomee (an outlet about sixty feet long and very narrow) is opened, and one of the Elephants is enticed to enter by having food thrown before it.* When the animal has advanced, the gate is shut and well secured on both sides. Finding his retreat now cut off, and the place so narrow that he cannot turn himself, he proceeds, and exerts his utmost efforts to break down the bars in front of him, running against them, screaming and roaring most violently, and battering them, like a ram, by repeated blows with his head, retreating and advancing with the utmost fury. In his rage he even rises, and leaps upon the bars with his fore-feet, striving to break them down with his weight. When he becomes fatigued with these exertions, ropes are, by degrees, put round him; and he is secured in a manner nearly similar to that adopted in taking the single males; and thus, in succession, they are all secured.

The Elephants are now separated, and each is given into the care of a keeper, who is appointed to attend and instruct him. Under this man there are three or four others, who assist in supplying food and water till the animal becomes sufficiently tractable to feed himself. In a few days the keeper advances cautiously to the side of the Elephant, and strokes and pats him with his hand, at the same time speaking to him in a soothing voice; and after a little while, the beast begins to know the keeper and obey his commands. By degrees the latter becomes familiar, and at length mounts upon the animal's back, from one of the tame Elephants. He gradually increases the intimacy, as the animal becomes more tame, till at last he is permitted to seat himself on his neck, from which place he is afterwards to regulate and direct all his motions. In five or six weeks the Elephant becomes obedient to his keeper; his fetters are by degrees taken off; and generally in about six months he will suffer himself to be conducted from place to place, with as much complacency as if he had been long subdued. Care, however, is taken not to let him approach his former haunts, lest a recollection of them should induce him to attempt to recover his liberty; for it is generally believed that, if an Elephant escape, after having been in bondage, it is not possible, by any art, again to entrap him. The following instances, recorded in the Philosophical Transactions for 1799, will, however, prove that this is not the fact:—

A female Elephant was first taken in the year 1765, and two years afterwards was suffered to escape into the woods. She was retaken;

* In many places this mode is not adopted; but as soon as the herd has been surrounded by a strong palisade, Koomkees are sent in with proper people, who tie them on the spot, in the manner we have mentioned respecting the single male Elephants.

but broke loose in a stormy night, and again escaped. In 1782, more than ten years after her second escape, she was driven by the Elephant-hunters belonging to Mr. Leeke, of Longford-hall, in Shropshire, into an enclosure in which Elephants are secured; and the day following, when Mr. Leeke went to see the herd that had been taken, this Elephant was pointed out to him by the hunters, who well recollected her. They frequently called to her by name; to which she seemed to pay some attention, by immediately looking towards them when it was repeated; nor did she appear like the wild Elephants, who were constantly running about the enclosure in a rage, but seemed perfectly reconciled to her situation.

For eighteen days, she never approached near enough to the outlet to be secured. Mr. Leeke, at length, went himself, when there were only this Elephant, another female, and eight young ones remaining in the enclosure. After the other female had been secured, the hunters were ordered to call on this animal by name. She immediately came to the side of the ditch, within the enclosure; and some of the drivers were desired to carry in a plantain tree. She not only took the leaves of this from their hands with her trunk, but she opened her mouth for them to put a leaf into it; which they did, at the same time stroking and caressing her, and calling to her by name. One of the trained Elephants was now ordered to be brought to her, and the driver was told to take her by the ear, and order her to lie down. At first she retired to a distance, seeming angry: but, when the drivers, who were on foot, called to her, she immediately came and allowed them to stroke and caress her as before; and, a few minutes afterwards, she permitted the trained Elephants to be familiar with her. A driver from one of these then fastened a rope round her body, and jumped on her back: this, at the moment, she did not like, but she was soon reconciled to it. A small cord was then placed round her neck, for the driver to put his feet in; who, seating himself in the usual manner, drove her about the enclosure, in the same manner as any of the tame Elephants.

In June, 1787, a male Elephant, taken the year before, was travelling, in company with some others, towards Chittigong, laden with baggage; and having come upon a Tiger's track, he took fright and ran off into the woods, in spite of all the efforts of his driver. On entering the wood, the driver saved himself by springing from the animal and clinging to the branch of a tree under which he was passing; and the Elephant escaped.

Eighteen months after this, when a herd of Elephants had been taken, and had remained several days in the enclosure, one of the drivers, attentively viewing a male Elephant, declared he resembled the animal that had run away. This excited the curiosity of every one to go and look at him; but when any person came near, the animal struck at him with his trunk, and in every respect appeared as wild and outrageous as any of the other Elephants. An old hunter at length coming up and examining him, declared that he was the very Elephant that had made his escape. Confident of this, he boldly rode up to him on a tame Elephant, and ordered him to lie

THE ENRAGED ELEPHANT.

down, pulling him, at the same time, by the ear. The animal seemed taken by surprise, and instantly obeyed the word of command.

A female Elephant, belonging to a gentleman at Calcutta, being ordered from the upper country to Chittygong, broke loose from her keeper, and was lost in the woods. The excuses which the keeper made were not admitted. It was supposed that he had sold the Elephant; his wife and family, therefore, were sold for slaves, and he was condemned to work upon the roads. About twelve years afterwards this man was ordered into the country, to assist in catching wild Elephants. He one day fancied that in a group which was before him, he saw his long-lost Elephant. He was determined to go up to it; nor could the strongest representations of the danger with which his rashness might be attended, dissuade him from his purpose. When he approached the animal, she knew him; and, giving him three salutes, by waving her trunk in the air, knelt down and received him on her back. She afterwards assisted in securing the other Elephants, and likewise brought with her three young ones which she had produced during her absence. The keeper recovered his character; and, as a recompense for his sufferings and intrepidity, had an annuity settled on him for life. This Elephant was afterwards in the possession of Governor Hastings.

These and other instances that have occurred, clearly evince that Elephants have not the sagacity to avoid a snare into which they have, even more than once, fallen.

The Elephant, when tamed, becomes the most gentle and obedient of all domestic animals. He soon learns to comprehend signs, and

even to understand the expression of sounds. He distinguishes the tones of command, of anger, or of approbation; and regulates his actions accordingly. He receives the orders of his keeper with attention, and executes them with prudence and eagerness, but without any degree of precipitation; for his movements are always measured, and his character seems to partake of the gravity of his bulk. He is easily taught to bend his knees for the accommodation of those who mount him; and to use his trunk for raising burdens, and to assist in loading himself. He allows himself to be clothed, and is employed in drawing chariots, ploughs, and wagons. He draws steadily, and never proves restive, unless insulted by improper chastisement. The man who conducts him generally rides on his neck, and uses an iron rod, hooked at the end, or having there a kind of bodkin, with which he pricks the head, or sides of the ears, in order to urge him forward or to turn him. But words are generally sufficient.

The domestic Elephant performs more work than perhaps six horses. He is generally fed with rice, raw or boiled, and mixed with water; and, to keep him in full vigor, he is said to require daily a hundred pounds weight of this food, besides fresh herbage to cool him; and he ought to be led to the water twice or thrice a day for the purpose of bathing. He sucks up water in his trunk, carries it to his mouth, drinks part of it, and, by elevating his trunk, allows the remainder to run over every part of his body. His daily consumption of water, for drink, has been calculated at forty-five gallons.

To give an idea of the labor which he performs, it is sufficient to remark, that all the tuns, sacks, and bales, transported from one place to another in India, are carried by Elephants; that they carry burdens on their bodies, on their necks, and even in their mouths, by giving them the end of a rope, which they hold fast with their teeth; that, uniting sagacity to strength, they never break or injure any thing committed to their charge; that from the banks of the rivers, they put these bundles into boats without wetting them, laying them down gently, and arranging them where they ought to be placed; that, when disposed, in the places where their masters direct, they try with their trunks whether the goods are properly stowed; and, if a tun or a cask roll, they go, of their own accord, in quest of stones to support and render it firm.

M. Phillipe was witness to the following facts:—He one day went to the river at Goa, near which place a great ship was building. Here was a large area, filled with beams for that purpose. Some men tied the ends of heavy beams with a rope. This was handed to an Elephant, who carried it to his mouth, and, after twisting it round his trunk, drew it, without any conductor, to the place where the ship was building. One of the Elephants sometimes drew beams so large, that it would have required more than twenty men to move them. But what surprised this gentleman still more, was that when other beams obstructed the road, he elevated the ends of his own beam, that it might run easily over those which lay in his way.

Elephants not only obey the voice of their keeper when present,

but some, even in his absence, will perform extraordinary tasks which have been previously explained to them. "I have seen two," says M. D'Obsonville, "occupied in beating down a wall; which their *Cornacs* or keepers had desired, and had encouraged them to do by a promise of fruits and brandy. They combined their efforts; and doubling up their trunks, which were guarded from injury by leather, thrust them against the strongest part of the wall; and by reiterated shocks continued their efforts, carefully observing and following with their eyes the effects of the equilibrium: at last, when it was sufficiently loosened, making one violent push, they suddenly drew back together, that they might not be wounded; and the whole came tumbling to the ground."

At a certain season of the year, these animals are seized with a ferocity which renders them intractable, and formidable: but in their ordinary state, the most acute pains will not provoke them to injure those who have not offended them. A female Elephant, rendered furious by the wounds she had received, at the battle of Hambour, ran about the field making the most hideous cries. A soldier, not withstanding the alarm of his comrades, was unable, perhaps on account of his wounds, to fly. The Elephant approached, seemed afraid of trampling upon him, took him up with her trunk, placed him gently on his side, and continued her route.

An incident, to which M. le Baron de Lauriston was witness, during one of the late wars in the East, forms another proof of the sensibility of the Elephant. This gentleman, from peculiar circumstances, was induced to go to Laknaor, at a time when an epidemic distemper was making the greatest ravages amongst the inhabitants. The principal road to the palace-gate was covered with the sick and dying, extended on the ground, at the very moment when the nabob must necessarily pass. It appeared impossible for his Elephant to do otherwise than tread upon and crush many of these poor wretches, unless the prince would stop till the way could be cleared; but he was in haste, and such tenderness would have been unbecoming in a person of his importance. The Elephant, however, without appearing to slacken his pace, and without having received any command for that purpose, assisted them with his trunk, removed some, set others on their feet, and stepped over the rest with so much address and assiduity, that not one person was wounded. An Asiatic prince and his slaves were deaf to the cries of nature, while the heart of the beast relented: he, more worthy than his rider to elevate his front towards the heavens, heard and obeyed the calls of humanity.

The following instance of the sagacity of these animals was mentioned to Dr. Darwin, by a gentleman of undoubted veracity, who has been much conversant with our Eastern settlements. The Elephants that are employed in carrying the baggage of our armies, are put each under the care of one of the natives of Indostan; and while this person and his wife go into the woods to collect leaves and branches of trees for his food, they fix him to the ground by a long chain, and frequently leave a child, yet unable to walk, under his protection; and the intelligent animal not only defends it, but, as it

ELEPHANT-HUNTING IN INDIA.

creeps about, when it arrives near the extremity of his chain, he wraps his trunk gently round its body, and brings it again into the centre of his circle. Elephant-hunting has always been a favorite sport in India. The native princes are fond of it, and the English residents not less so. It is rather a dangerous sport.

During one of the wars in India, many Frenchmen had an opportunity of observing one of the Elephants that had received a flesh-wound from a cannon-ball. After having been twice or thrice conducted to the hospital, where he extended himself to be dressed, he afterwards used to go alone. The surgeon did whatever he thought necessary, and sometimes applied even fire to the wound. The pain which the animal suffered, often caused him to utter the most plaintive groans, yet he never expressd any other token than that of gratitude, to the person who thus by momentary torments effected his cure.

DEAD ELEPHANT.

In the last war, a young Elephant received a violent wound in its head, the pain of which rendered it so frantic and ungovernable, that it was found impossible to persuade the animal to have the part dressed. Whenever any one approached, it ran off with fury, and would suffer no person to come within several yards of it. The man who had the care of this animal, at length hit upon a contrivance for securing it. By a few words and signs, he gave to its mother sufficient intelligence of what was wanted; the sensible creature immediately seized her young one with her trunk, and held it firmly down, though groaning with agony, while the surgeon completely dressed the wound: and she continued to perform this service every day till the animal was perfectly recovered.

In India these animals were formerly employed in the launching of ships. An Elephant was directed to force a very large vessel into the water; but the work proved superior to his strength. His master, in a sarcastic tone, bade the keeper take away this lazy beast, and bring another. The poor animal instantly repeated his efforts, fractured his skull, and died on the spot.

In the Philosophical Transactions, a story is related of an Elephant having formed such an attachment for a very young child, that he was never happy but when the child was near him. The nurse frequently took it in its cradle, and placed it between his feet. This he at length became so much accustomed to, that he would never eat his food except it was present. When the child slept, he would drive off the flies with his proboscis; and when it cried, would move the cradle backward and forward, and thus rock it again to sleep.

A sentinel belonging to the present menagerie at Paris, was always very careful in requesting the spectators not to give the Elephants any thing to eat. This conduct particularly displeased the female; who beheld him with a very unfavorable eye, and several times endeavored to correct his interference, by sprinkling his head with water from her trunk. One day, when several persons were collected

to view these animals, a by-stander offered the female a bit of bread. The sentinel perceived it; but the moment he opened his mouth to give his usual admonition, she, placing herself immediately before him, discharged in his face a considerable stream of water. A general laugh ensued; but the sentinel, having calmly wiped his face, stood a little to one side, and continued as vigilant as before. Soon afterwards, he found himself under the necessity of repeating his admonition to the spectators; but no sooner was this uttered, than the female laid hold of his musket, twirled it round with her trunk, trod it under her feet, and did not restore it till she had twisted it nearly into the form of a screw.

M. Navarette says, that at Macassar, an Elephant driver had a cocoa-nut given him, which, out of wantonness, he struck twice against his Elephant's forehead, to break. The day following the animal saw some cocoa-nuts exposed in the street for sale; and taking one of them up with his trunk, beat it about the driver's head and killed him on the spot.

An Elephant that was exhibited in France some years ago, was remarked to be peculiarly dexterous in the use of his trunk. With great ease he one day loosened the buckle of a large double leather strap, with which his leg was fastened; and though the attendants had wrapped the buckle round with a small cord, and tied many knots on it, the creature deliberately loosened the whole, without breaking either the cord or the strap. One night, after having disengaged himself in this manner from his strap, he broke up the door of his lodge with such dexterity as not to awaken the keeper. Thence he went into several courts of the menagerie; forcing open doors, and throwing down the walls where the doors were too narrow for him to pass. In this manner he got access to the apartments of other animals; and so terrified them, that they fled into the most retired corners of the enclosure.

That Elephants are susceptible of the warmest attachment to each other, the following account, extracted from a late French journal, will sufficiently prove. Two Ceylonese Elephants, a male and female, each about two years and a half old, were, in 1786, brought into Holland, as a present to the Stadtholder. After the subjugation of Holland by the French, they had been separated, in order to be conveyed from the Hague to Paris, where a spacious hall was prepared for their reception in the place now called the Jardin des Plantes. This was divided into two apartments, which had a communication by means of a large door resembling a portcullis. The enclosure round these apartments consisted of very strong wooden rails. The morning after their arrival, they were conveyed to this habitation. The male was first brought. He entered the apartment with suspicion, reconnoitred the place, and then examined each bar separately with his trunk, and tried its solidity by shaking it. When he arrived at the portcullis, which separated the apartments, he observed that it was fastened only by a perpendicular iron bar. This he raised with his trunk; he then pushed up the door, and entered the second apartment where he received his breakfast. These two animals had been parted

HUNTING THE ELEPHANT BY NIGHT.

(but with the utmost difficulty) for the convenience of carriage, and had not seen each other for some months; and the joy they experienced, on meeting again after so long a separation, is scarcely to be expressed. They immediately rushed towards each other, and sent forth cries of joy so animated and loud as to shake the whole hall. They breathed also through their trunks with such violence, that the blast resembled an impetuous gust of wind. The joy of the female was the most lively. She expressed it by quickly flapping her ears, which she made to move with astonishing velocity, and drew her trunk over the body of the male with the utmost tenderness. She particularly applied it to his ear, where she kept it a long time; and, after having drawn it over his whole body, often moved it affectionately towards her own mouth. The male did the same over the body of the female, but his joy was more steady. He seemed, however, to express it by tears, which fell from his eyes in abundance. After this time they occupied the same apartment; and their mutual tenderness and natural affection, excited the admiration of all who have visited them.

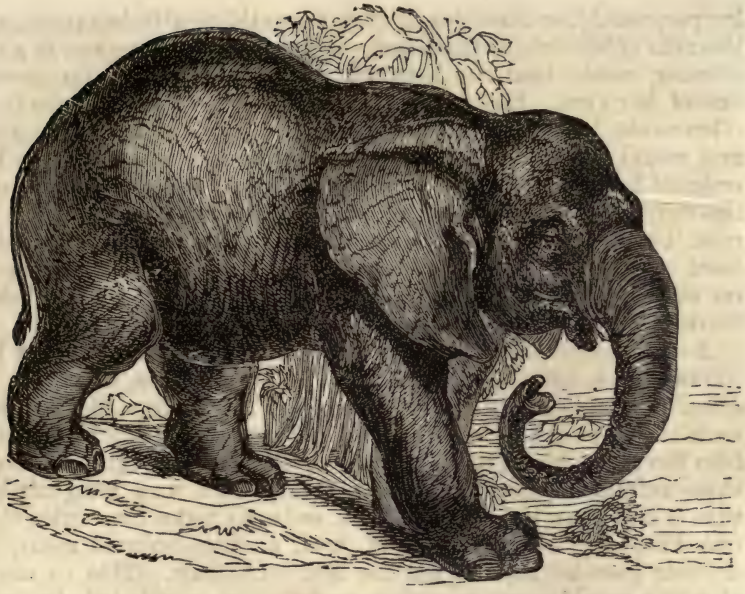
These two Elephants consumed every day a hundred pounds weight of hay, and eighteen pounds of bread, besides several bunches of carrots, and a great quantity of potatoes. During summer they drank about thirty pails of water in the day. On their arrival in Holland, they were conveyed in a vessel, up the river Waal, to Nimeguen, whence they were driven on foot to Loo. The attendants had much difficulty in inducing them to cross the bridge at Arnheim. The

animals had fasted for several hours, and a considerable quantity of food was placed for them on the opposite side of the bridge. Still, however, some time elapsed before they would venture upon it; and at last they would not make any step without first carefully examining the planks, to ascertain that they were firm. During the time they were kept at Loo they were perfectly tame, and were suffered to range at liberty. They would sometimes come into the room at the dinner-hour, and take food from the company. After the conquest of Holland, from the cruelty with which they were treated by many of the spectators who crowded to visit them, they, however, lost much of their gentleness; and their subsequent confinement in the cages in which they were conveyed to Paris, even rendered them, in some degree, ferocious towards spectators.

Elephants are said to be extremely susceptible of the power of music. Suetonius informs us, that the emperor Domitian had a troop of Elephants disciplined to dance to the sound of music; and that one of them, who had been beaten for not having his lesson perfect, was observed the night afterwards in a meadow, practising it by himself!

At Paris some curious experiments have been lately made respecting the power of music over the sensibility of the Elephant. A band of music went to play in a gallery extending round the upper part of the stalls in which were kept two Elephants, distinguished by the names of *Margaret* and *Hans*. A perfect silence was procured. Some provisions of which they were fond, were given them to engage their attention; and the musicians began to play. The music no sooner struck their ears, than they ceased from eating, and turned in surprise to observe whence the sound proceeded. At the sight of the gallery, the orchestra, and the assembled spectators, they manifested considerable alarm, as though they imagined there was some design against their safety. But the music soon overpowered their fears, and all other emotions became completely absorbed in their attention to it. Music of a bold and wild expression excited in them turbulent agitations, expressive either of violent joy, or of rising fury. A soft air, performed on the bassoon, evidently soothed them to gentle and tender emotions. A gay and lively air moved them, especially the female, to demonstrations of highly sportive sensibility. Other variations of the music produced coresponding changes in the emotions of the Elephants.

A male Elephant was brought to England in the year 1793, and was purchased by Mr. Pidcock of Exeter 'Change, London. This animal was taught by his keeper to perform a great variety of tricks for the amusements of the visitors. If a pot of ale was brought to him, he would put the extremity of his trunk into it, and sucking up the liquor, would afterwards blow it into his mouth; this done, he would make a motion with his head, which the keeper always took care to tell the donor, was the animal's mode of expressing gratitude for the gift; and which, probably, the major part of the spectators believed to be really the case. He would take up a watch or even the smallest piece of money from the floor; and, at command, would put it again



THE ELEPHANT.

into the owner's hand or pocket. He would take from any person a piece of money, and give it to a boy (who attended for the purpose) for bread, fruit, or vegetables, which he immediately ate. If his keeper ordered him, he would unbolt the door of his den, or untie, with the finger at the extremity of his proboscis, a piece of strong cord that was fastened to the door. When the keeper has been engaged in sweeping the den, the imitative animal has not unfrequently taken in his trunk another broom, and attempted to sweep the place after him.

In the month of August, 1798, whilst a considerable part of Mr. Pidcock's collection of animals was at Lancaster, for the purpose of exhibition, several intoxicated sailors came to the carriages in the night, and began to demolish them. The keeper, who was roused by the noise, went out, and reprimanded the sailors for their conduct. This had no effect in influencing them to desist; but in return they began to ill-treat the man. His cries reached the ears of the Elephant: as soon as the animal recognized his voice, he burst open the door of his den, and immediately came out to the keeper's assistance. The moment, however that the sailors perceived him, they all ran off, and little mischief was done. This animal died in the year 1803.

There was afterwards at Exeter 'Change, a female Elephant, which was brought to England in the Rockingham East-Indiaman, and landed on the 6th of January, 1796. At the time of her arrival she was not much bigger than a large hog, but she afterwards attained her greatest size. She was considerably more thick and fleshy, both in the body and limbs, than the male, and her head, in proportion, was larger. This animal, by some secret signal given from the

keeper, would, at his order, beat as many times with her trunk against the rails of her den, as there were persons in the room; and in a similar manner, would beat the hour, after the man had held up a watch to one of her eyes. She would take off his hat, and again put it on, as often as she was commanded. She would lie down, and rise up again; and would unbolt and bolt the door of her den, whenever the keeper ordered her to do so. If the keeper put a shilling near the wall of the room, and *out of the reach of the animal's trunk*, and ordered her to pick it up, she immediately extended her trunk towards it, and blew hard against the wall: the blast moved the shilling within her reach, on which she seized it, and delivered it to him, or to any person that he directed.

As all the animals that are deposited in the menagerie at Exeter 'Change, are kept up one or more flights of stairs, it excites no inconsiderable degree of wonder, in most of the visitors, to conceive how such an unwieldy creature as an Elephant could have been conveyed into the place where it is exhibited. The mode is this: when one of these animals arrives, he is compelled to walk up a kind of platform that is laid over the staircase. In order to make him enter the den, one keeper pricks him behind, with a sharp-pointed spear, whilst another goes before, and entices him with fruit. This, of course, is always a troublesome operation, and requires much care and address in the persons employed.

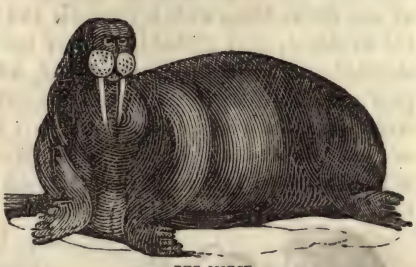
An Elephant which is now in Exeter 'Change is a male, and measures more than ten feet in height. He is so tractable as to have been several times introduced in the dramatic entertainments at Covent-garden Theatre. The keeper of this animal usually sleeps in a place above his den, and at the height of twelve or fourteen feet from the ground. One night, about the end of the year 1819, the man did not return home in the evening so early as usual, and the Elephant by means of his proboscis, and by resting his knees against the railing of his den, contrived to raise himself on his hind legs and reach the trunk in which the man kept his clothes. The animal opened the trunk, took out the clothes, and swallowed pantaloons, waistcoats, neckcloths, and several other articles of dress; and, happily for the owner, did not experience any inconvenience from this unusual diet.

Some of the Indians who believe in transmigration of souls, are persuaded that a body so majestic as that of the Elephant, must be animated with the soul of some great man or king. In many of the eastern countries, white Elephants are regarded as the living *manes* of the Indian emperors. Each of these animals has a palace, a number of domestics, and magnificent trappings; and eats out of golden vessels, filled with the choicest food. They are absolved from all labor. The emperor is the person before whom they bow the knee, and their salute is returned by the monarch. When the king of Pegu walks abroad, four white Elephants, adorned with precious stones and ornaments of gold, march before him; and when he gives audience, these Elephants are presented to him; and they do him reverence by raising their trunks, opening their mouths, making three distinct cries,

and then kneeling. This ended, they are led back to the stable, and there each of them is fed from a large golden vessel. They are twice a-day washed with water, taken from a silver vessel; and, in going to the vessels which contain their food and water, they are preceded by trumpets, and march with great majesty.

Such are the accounts, collected through a tolerably wide range of authorities, which I have been enabled to give, of the disposition and manners of this useful and most intelligent of all animals. These, in a few instances, may perhaps have been exaggerated by the writers, and must consequently be received with some degree of limitation; yet, we have had so many surprising instances of the sagacity of Elephants, related on unquestionable authority, that, however wonderful these may seem, it would not be right to entirely discredit any of them, without direct proof of their untruth. The authorities for the whole are such as have been received by different respectable and observing men, who, with both the power and ability of inquiring into the facts, seem to have entertained no doubts whatever of their validity.

THE MORSE, OR MANATI TRIBE.



THE MORSE.

These animals are destitute of fore teeth in both jaws. From the upper jaw proceed two great tusks, which point downward. The grinders have wrinkled surfaces. The lips are doubled. The hind feet are at the extremity of the body, and unite into a kind of fin.

The Manati are animals entirely marine. They feed on sea-weeds, corallines, and shell-fish, and are not carnivorous. Their elongated body, declining in bulk from the head gradually to the tail, and their short, fin-like feet, give them some alliance to the fishy tribes. They may indeed be considered as forming one of those steps in nature, by which we are conducted from one great division of the animal world to the other. Though the general residence of all the species is in the sea, yet some of them are perfectly amphibious, and live with equal ease on the land and in water.

THE GREAT MORSE, OR ARCTIC WALRUS,

This is an animal of enormous size. It sometimes measures nearly eighteen feet in length, and ten or twelve feet in circumference. In the upper jaw there are two long tusks, which bend downward. The head is small, the neck short, and body round. The lips are very thick, and the upper one is cleft into two large rounded lobes, on which there are several thick and semi-transparent bristles. The eyes are very small; and instead of external ears, there are only two small

circular orifices. The skin is thick, and scattered over with short, brownish hair. The legs are short; and on each foot there are five toes, connected by webs. The hind feet are considerably broader than the other. The tail is very short.

When we consider the enormous size and strength of these animals, and that they are furnished with weapons so powerful as the long tusks which project from their upper jaw, it was not without surprise we learn that their general disposition and habits are peaceful and inoffensive. The uses to which their tusks are applied, are the scraping of shell-fish, and other prey, out of the sand, and from the rocks; they are likewise employed in aiding their ascent upon the islands of ice, and as weapons of defence against the attacks of their enemies. If, however, their passions be roused by provocation or attack, these animals are sometimes exceedingly furious and vindictive. When surprised on the ice, the females first provide for the safety of their young ones, by flinging them into the sea, and conveying them to a secure distance; they then return with great rage to the place where they were attacked, for the purpose of revenging any injury they may have received. They will sometimes attempt to fasten their teeth on the boats, in order to sink them, or will rise under them in great numbers, with the intention of oversetting them; at the same time exhibiting all the marks of rage, roaring in a dreadful manner, and gnashing their teeth with great violence. They are strongly attached to each other, and will make every effort in their power, even to death, to liberate a harpooned companion. A wounded Walrus has been known to sink beneath the surface of the ocean, rise suddenly again, and bring up with it multitudes of others, who have united in an attack on the boat from whence the insult came.

ARCTIC MORSE ON AN ICEBURG

Great numbers of Arctic Walruses, regularly visit the Magdalene Islands, in the Gulf of St. Lawrence, every spring. Immediately on their arrival, they crawl up the sloping rocks of the coast in great numbers, and, when the weather is fair, they frequently remain for many days; but on the first appearance of rain, they retreat to the water with great precipitation. In the course of a few weeks they assemble in great numbers. Formerly, when undisturbed by the Americans, their herds have been known to amount to seven or eight thousand. These animals are killed by the inhabitants, for the sake of their skins and fat. At a proper time, the hunters, taking advantage of a sea-wind to prevent the animals from smelling them, endeavor in the night, with the assistance of dogs, to separate those that are furthest advanced from those nearest the water, driving them different ways. This is generally esteemed a very dangerous process, as it is impossible to drive them in any particular direction, and sometimes difficult to avoid being

attacked by them. In the darkness of the night, however, many of them lose their knowledge of the direction in which they lie, with respect to the water, so that they stray about, and are killed by the men at leisure; those nearest the shore becoming the first victims. In this manner fifteen or sixteen hundred have sometimes been killed at one time. They are then skinned, and the coat of fat that surrounds them is taken off, and dissolved into oil. The skin is cut into slices two or three inches wide, and exported to America for carriage-traces, and to England for glue.

It is said that the Walruses will sometimes attack small boats through wantonness, and not only thow the people into confusion, but frequently subject them to great danger. In the year 1766, some of the crew of a sloop which sailed to the northward, to trade with the Esquimaux, were attacked in their boat by a great number of these animals; and notwithstanding their utmost endeavors to keep them off, a small one, more daring than the rest, got in over the stern and, after sitting and looking at the men for some time, again plunged into the water to his companions. At that instant another of enormous size, was getting in over the bow; and, every other means proving ineffectual to prevent the approach of such an unwelcome visitor, the bow-man took up a gun loaded with goose-shot, put the muzzle into the animal's mouth, and shot him dead. He immediately sunk, and was followed by all his companions. The people then made the best of their way to the ship, and just arrived before the creatures were ready to make their second attack, which would probably have been much more dangerous than the first.

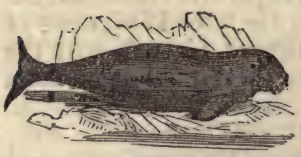
The following is captain Cook's description of a herd of Walruses, that were seen floating on a mass of ice off the northern part of the continent of America.—"They lie (says he) in herds, of many hundreds, upon the ice, huddling over one another like swine; and roar or bray so loud, that in the night, or in foggy weather, they gave us notice of the vicinity of the ice before we could see it. We never found the whole herd asleep, some being always upon the watch. These, at the approach of the boat, would wake those next to them; and the alarm being thus gradually communicated, the whole herd would be awaked. But they were seldom in a hurry to get away, till after they had been once fired at. They then would tumble over one another into the sea, in the utmost confusion. And if we did not at the first discharge, kill those we fired at, we generally lost them, though mortally wounded. Vast numbers of these animals would follow and come close up to the boats; but the flash of a musket in the pan, or even the pointing of a musket at them, would send them down in an instant. The female Walrus will defend her offspring to the very last, and at the expense of her own life, whether in the water or upon the ice. Nor will the young one quit the dam, though she be dead; so that, if one be killed, the other is a certain prey."

We are informed by Crantz, in his account of Greenland, that Walruses, when playing about in the water, have been frequently observed, with their long tusks, to draw sea-fowl beneath the surface, and after a little while, to throw them up into the air. As they are not car-

nivorous animals, but live entirely on shell-fish and marine plants, they do not eat these birds, consequently this can be done only out of wantonness and frolic.

The tusks of the Walrus, which weigh from ten to thirty pounds each, are used as ivory; but the animals are sought after principally for the sake of their oil. A very strong and elastic leather, it is said, may be prepared from the skin. The animals frequently weigh from 1500 to 2000 pounds, and yield from one to two barrels of oil each.

THE WHALE-TAILED MORSE, OR MANATI.



MANATI.

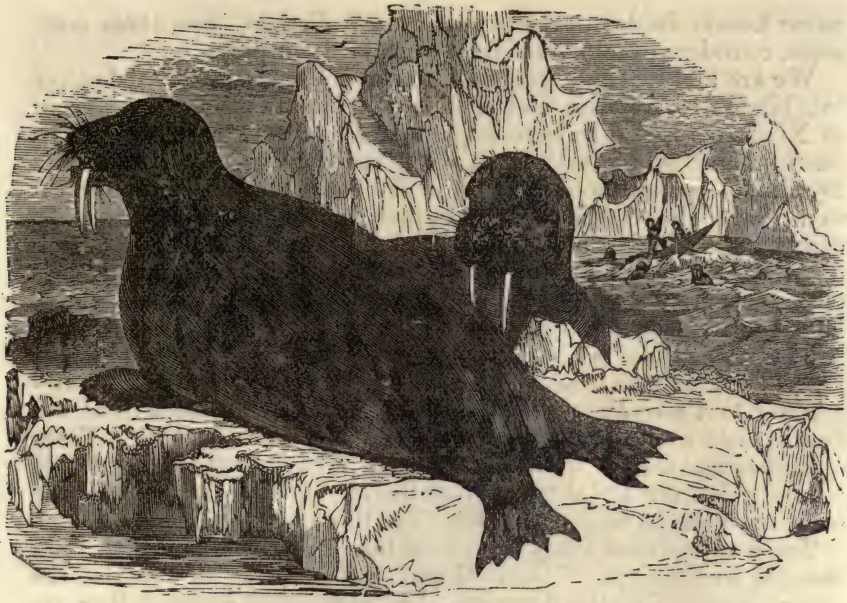
The length of the whale-tailed Manati is sometimes nearly twenty-eight feet, and the weight as much as eight thousand pounds. The head is small. The lips are double; and, near the junction of the jaws, the mouth is filled with white tubular bristles, which are of use to prevent the food from running out of their mouth with the water. The eyes are extremely small, as also are the orifices of the ears. The tail is thick and strong; ending in a black, stiff fin. The skin is thick, hard, and black, and full of inequalities, like the bark of oak; and beneath this there is a thick blubber.

These animals frequent chiefly the seas that lie betwixt America and Kamtschatka, and are seldom seen upon the shore, unless driven there by tempestuous weather. They are always found in herds, in which the old ones keep behind, and drive the young ones before them; some at the same time going along the sides, by way of protection. They live in families, each consisting of perhaps a male and female, a half-grown young one, and a new-born cub; and these families frequently unite, so as to form vast droves.

In their manners they are peaceable and harmless, and have a very extraordinary attachment to each other. When one of them is hooked, or struck with a harpoon, the whole herd will attempt its rescue. Some will strive to overset the boat by going beneath it; others will fling themselves on the rope of the hook, and press it down in order to break it; and others again will make the utmost efforts to wrench the instrument out of the body of their wounded companion.

In their conjugal affection, if such it may be termed, they are most exemplary. A male, after having used all its endeavors to release his mate, which had been struck, pursued her to the very edge of the water; and no blows that were given could force him away. As long as the deceased female continued in the water, he persisted in his attendance; and even for three days after she was drawn on shore, cut up, and carried away, he was observed to remain in expectation of her return.

These animals, which, like the last species, are eagerly pursued by seamen for the sake of their blubber and skins, are generally caught by means of a harpoon fastened to a long line. The strongest man in the boat strikes the instrument into the nearest animal. This done, twenty



HUNTING THE MORSE.

or thirty people on shore seize the rope, and drag the creature to land. The poor beast, assisted by its faithful companions, makes every possible resistance; it clings with its feet to the rocks, till it leaves the skin behind; and often great fragments of rock will fly off before it can be secured.

The flesh of these animals is coarser than beef, and does not soon putrefy; that of the young ones is stated to be not much unlike veal.

THE ROUND-TAILED MANATI.

The Round-tailed Manati are about six feet in length, and three or four in circumference. They have a short, thick neck, small eyes, and thick lips; are very thick about the shoulders, and taper gradually to the tail, which is broad and round. The skin is thick and hard, and has a few hairs scattered over it.

Sometimes, in their frolicsome moods, the Round-tailed Manati are observed to leap to great heights above the surface of the water. They chiefly delight in shallow waters near low land, and in places that are secure from surges, and where the tides run gently. Marine plants seem to constitute their principal food.

They are caught by means of harpoons; and the affection of the parent for her offspring is as conspicuous in this as in the last species If a young one be with its mother when she is struck by a fisherman, careless of her own sufferings she affectionately takes it under her fins, or feet, to protect it from her own fate. But how cruelly do mankind reward them for these tender offices! The young one, which will

never forsake its dam, even in the greatest distress, is, on these occasions, considered in no other light than a certain prey.

We are told that this species of Manati is often tamed by the native inhabitants of America, and that it delights in music. A governor of Nicaragua is said to have kept one of them in a lake near his house, for six-and-twenty years. The animal was usually fed with bread, and fragments of victuals, in the same manner as fish are fed in a pond. He became so familiar, that, in tameness and docility, he nearly equalled what has been boasted by the ancients, of their Dolphin. The domestics gave him the name of Matto; and, when any of them came at the regular hour to feed him, and called him by his name, he would immediately approach the shore, and take food out of their hands. Sometimes he would even crawl up to the house to receive it; and when there, would play with the servants and children. According to Peter Martyr, the writer of the account, this animal has been known even to carry persons across the lake on his back. From circumstances similar to these, some writers have been led to imagine not only that the Dolphin, but that the Mermaids and Syrens, of the ancients, were, in reality, no other than this species of Manati.

These animals are found in most of the great rivers of Africa, from Senegal to the Cape of Good Hope; and in many of those of the eastern coasts of South America. In the river of Amazon, they are often seen nearly a thousand leagues from its mouth.

Their flesh, as food, is stated to be white, sweet, and salubrious. The thicker parts of the skin, cut into slices, and dried, become very tough, and are used for whips. The thinner parts, which are more pliant, serve the Indians as thongs for fastening together the sides of their canoes.

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*Sea-Ape Manati.** We are informed by Mr. Steller, that he saw, off the coast of America, a marine animal, which he denominates a Sea-ape. He states, that it was extremely playful, and amused all who saw it by a great number of frolicsome tricks. It sometimes swam on one, and sometimes on the other side of the ship, gazing at it with great admiration. Occasionally it would stand erect, for a considerable time together, with one third of its body above the water; then dart beneath the ship and appear on the other side, and repeat the same for twenty or thirty times successively. It would frequently rise with a sea-plant in its mouth, not unlike the bottle-gourd, toss it up and catch it, and play with it a thousand antics.

* This animal, though placed by Mr. Pennant among the Manati, seems rather to belong to the Seals. Its head was somewhat like that of a Dog, and the ears were sharp and upright. The eyes were large, and there were strong whiskers on each lip. The body was round and conoid, the thickest part near the head; and the animal was apparently destitute of feet.

FERAE.

Most of the animals belonging to this order have six front teeth, of a somewhat conical shape, both in the upper and under jaw. Next to these are strong and sharp canine-teeth; and the grinders are formed into conical or pointed processes. Their feet are divided into toes, which are armed with sharp hooked claws.

OF THE SEALS IN GENERAL.

THE SEAL.

In their upper jaw the Seals have six parallel and sharp-pointed fore-teeth, the exterior ones of which are the largest; and in the lower jaw four, that are also parallel, distinct, and equal. There is one canine-tooth in each jaw; and five grinders above, and six below, all of which have three knobs or points.

There is a very close alliance between the Seals and the Manati; most of them having the same kind of elongated body, and fin-like feet. These animals, as well as the Manati, inhabit the waters, where they swim with great ease. In summer they live much on the shores, but in winter they confine themselves almost entirely to the sea. Their flesh, fat, and hides, are all of use, but in an economical and commercial view.

THE COMMON SEAL.

The usual length of these animals is five or six feet. The head is large and round; the neck small and short; and on each side of the mouth there are several strong bristles. From the shoulders the body tapers to the tail. The eyes are large: there are no external ears; and the tongue is cleft or forked at the end. The legs are very short; and the hinder ones are placed so far back, as to be of but little use, except in swimming. The feet are all webbed. The tail is short. The animals vary in color; their short, thick-set hair being sometimes grey, sometimes brown or blackish, and sometimes even spotted with white or yellow.

THE COMMON SEAL.

The dens or habitations, in which these animals most commonly reside, are hollow rocks, or caverns, near the sea, but out of the reach of the tide. In the summer-time they will frequently leave the water, to bask or sleep in the sun on the large stones or shivers of rocks. They are, however, extremely watchful, never, says Mr. Pennant, sleeping long without moving. At intervals of about a minute or two, they raise their heads, to see that they are not threatened with danger. Providence seems to have given to them this propensity, because, being destitute of auricles or external ears, they consequently are neither able to hear quickly, nor from a great distance.

In their proper depth of water these animals are very rapid in their motions. They will dive like a shot, and in a few moments afterwards, rise at a distance of forty or fifty yards. A person of the parish of Sennam, in Cornwall, once saw a seal in pursuit of a Mullet. The Seal turned it to and fro, in deep water, as a grey-hound does a hare. The Mullet, at last, found that it had no way to escape but by running into shoal-water. The Seal pursued; and the former, to get more surely out of danger, threw itself on its side, by which means it darted into shallower water than it could have swam in with the depth of its paunch and fins, and thus escaped.

Seals, if taken young, are capable of being tamed; they will follow their master like a Dog, and come to him when called by the name that is given to them. Some years ago a young Seal was thus domesticated. It was taken a little distance from the sea, and was generally kept in a vessel full of salt water; but sometimes it was allowed to crawl about the house, and even to approach the fire. Its natural food was regularly procured for it; and it was carried to the sea every day, and thrown in from a boat. It used to swim after the boat, and always allowed itself to be taken back. It lived thus for several weeks; and probably would have lived much longer, had it not been sometimes too roughly used.

A Seal that was exhibited in London, in the year 1750, answered

to the call of his keeper, and attended to whatever he was commanded to do. He would take food from the man's hand, crawl out of the water, and, when ordered, would stretch himself out at full length on the ground. He would thrust out his neck and appear to kiss the keeper, as often as the man pleased; and when he was directed, would again return into the water.

Some time ago, a farmer of Aberdowr, a town on the Fifeshire side of the banks of the Frith of Forth, in going out among the rocks to catch lobsters and crabs, discovered a young Seal, about two feet and a half long, which he brought home. He offered it some pottage and milk, which the animal greedily devoured. It was fed in this manner for three days, when the man's wife, considering it an intruder in her family, would not suffer it to be kept any longer. Taking some men of the town along with him for the purpose, her husband threw it into the sea; but notwithstanding all their endeavors, it persisted in returning to them. It was agreed that the tallest of the men should walk into water as far as he could, and, having thrown the animal in, that they should hide themselves behind a rock at some distance. This was accordingly done; but the animal returned from the water, and soon discovered them in their hiding-place. The farmer again took it home, where he kept it for some time; but at length growing tired of it, he had it killed for the sake of its skin.

We are informed that Seals delight in thunder-storms; and, that during these times, they will sit on the rocks, and contemplate with apparent pleasure and gratification the convulsion of the elements. The Icelanders entertain, respecting these animals, a strange superstition. They believe them to resemble the human species more than any other creature; and that they are the offspring of *Pharaoh* and his host, who were converted into Seals when they were overwhelmed in the *Red Sea*.

The females produce two or more young ones at a birth. These, in northern climates, they deposit in cavities of the ice; and the male makes a hole through the ice near them, for a speedy communication with the water. Into this they always plunge with their offspring, the moment they observe a hunter approach; and at other times they descend into it spontaneously in search of food. The manner in which the male Seals make these holes is astonishing: neither their teeth nor their paws have any share in the operation. It is performed, says M. Acerbi, solely by their breath. When the females come out of the sea, they bleat *like sheep* for their young: and though they often pass among hundreds of other young ones before they come to their own, yet they will never suffer any of the strangers to suck them. About a fortnight after their birth, they are taken out to sea, and instructed in swimming and seeking their food: when they are fatigued, the parent is said to carry them on her back. The Seal-hunters in Caithness assured Mr. Pennant that their growth was so rapid, that in nine tides (about fifty-four hours) after their birth, they became as active as their parents.

These animals are pursued and killed for the advantage of their skins and oil. The time when this is done is generally in October, or the beginning of November. The hunters, furnished with torches and

SEAL-HUNTING IN SCOTLAND.

bludgeons, enter the mouths of the caverns about midnight, and row in as far as they can. They then land; and, having stationed themselves in proper places, begin by making a great noise, which alarms the animals, and brings them down in confusion from all directions towards the sea. In this hazardous employment much care is requisite on the part of the hunters to avoid the throng, which presses upon them with great impetuosity, and bears away every thing that opposes its progress; but when the first crowd has passed, they kill great numbers of young ones, which generally straggle behind.

To the inhabitants of Greenland, Seals are animals of great importance. The sea is to these people what corn-fields are to us; and the Seal-fishery is their most copious harvest. The flesh supplies them with their principal food: the fat furnishes them with oil for their food, their lamps, and fires; and the fibres of the sinews serve better for sewing with than thread or silk. Of the skins of the entrails, this people make their windows, curtains for their tents, and shirts; and part of the bladders they use in fishing, as buoys or floats to their harpoons. Of the bones they formerly made all those instruments and working-tools that are now supplied to them by the introduction of iron. Even the blood is not lost; for they boil that, with other ingre-

dients, as soup. Of the skins they form clothing, coverings for their beds, houses, and boats, and thongs and straps of every description. To be able to pursue and kill Seals, is the height of the Greenlanders' desires and pride; and to this labor, which is in truth an arduous one, they are trained from their childhood.

The hunting of the Seal also sets the courage and enterprize of the Finlander in the strongest possible light. The season for this chase begins when the sea breaks up, and the ice floats in shoals upon the surface. Four or five peasants will go out to sea in one small open boat, and will often continue more than a month absent from their families. Thus do they expose themselves to all the horrors of the northern seas, having only a small fire, which they kindle on a sort of brick hearth, and living on the flesh of the Seals which they kill. The fat and skins they bring home. The perils with which these voyagers have to struggle, are almost incredible. They have incessantly to pass between masses of ice, which threaten to crush their little bark to atoms. They mount the floating shoals; and, creeping along them, steal cautiously upon the animals, and kill them as they repose on the ice.

The Common Seals are found on most of the rocky shores of Great Britain and Ireland, and especially on those of Scotland. They inhabit all the European seas; and are found considerably within the arctic circle, in the seas both of Europe and Asia, and even upon the shores of Kamtschatka.

Their usual food consists of fish and other marine productions, all of which they eat beneath the water. When they are in the act of devouring fish that abound in oil, the place may be easily remarked by the smoothness of the waves immediately above. The flesh of Seals formerly found, in England, a place at the tables of the great; as appears from the bill of fare of a vast feast which archbishop Nevil gave in the reign of king Edward the Fourth.

The voice of a full-grown Seal is hoarse, and not unlike the barking of a dog; and that of the young ones resembles, in some measure, the mewing of a kitten.

THE URSINE SEAL.

The males are about eight feet in length, but the females are much smaller. Their bodies are thick, decreasing somewhat towards the tail. The nose projects like that of a Pug Dog: and the eyes are large and prominent. The fore-legs are about two feet long, and, with the feet, have somewhat the appearance of turtles' fins. The hind legs are rather shorter; and have five toes, separated by a web. The general color of the hair is black; but that of the old ones is tipped with gray. The females are ash-colored.

Like the species last described, the Ursine Seals live in families, every male being surrounded by from eight to fifty females, whom he guards with the utmost jealousy. Each family keeps separate from the others, although they lie by thousands on the shores which they inhabit. The males exhibit great affection towards their offspring,

URSINE SEAL.

and equal tyranny towards the females. They are fierce in the protection of the former; and, should any one attempt to carry off their cub, they will stand on the defensive, while the female conveys it away in her mouth. Should she, however, have the misfortune to drop it, the male instantly quits his enemy, falls on her, and beats her against the stones till he leaves her for dead. But if the young one be entirely carried off, he appears excessively affected, sheds tears, and exhibits every mark of sorrow.

Those animals that, through age or impotence, are deserted by the females, withdraw themselves from society, and not only become splenetic, peevish, and quarrelsome, but so much attached to their own stations, as to prefer death to the loss of them. If they perceive another animal approaching them, they are instantly roused from their indolence, snap at the encroacher, and give him battle. During the fight, they often insensibly intrude on the station of their neighbor, who then joins in the contest: so that at length the civil discord, attended with hideous growls, spreads along the whole shore.

This is one of the causes of the disputes which take place among these irritable creatures. But a much more serious cause is, when an attempt is made to seduce away any of their females. A battle is the sure consequence of the insult, and sad indeed is the fate of the vanquished animal: he instantly loses all his females, who immediately desert him and attach themselves to the victor.

When only two of the animals are engaged in combat, they rest at intervals, laying down near each other; then, rising both at once, they renew the battle. They fight with their heads erect, and turn them aside to avoid the blows. As long as their strength continues equal, they use only their fore-paws; but the moment that one of them

fails, the other seizes him with his teeth, and throws him upon the ground. The wounds they inflict are very deep, and like the cut of a sabre; and it is said, that in the month of July scarcely one is to be seen that has not some mark of this description. At the conclusion of an engagement, such as are able throw themselves into the sea, to wash off the blood. They are exceedingly tenacious of life, and will sometimes live a fortnight after receiving such wounds as would immediately have destroyed any other animal.

Besides their notes of war, the Ursine Seals have several others. When they lie on the shore, and are diverting themselves, they low like oxen. After victory, they make a noise somewhat like the chirping of a cricket; and after a defeat, or after receiving a wound, they mew like a cat.

When they come out of the water, they shake themselves, and smooth their hair with their hind-feet; apply their lips to those of the females, as if to kiss them; lie down and bask in the sun with their hind legs up, which they wag as a dog does his tail. Sometimes they lie on their back; and sometimes roll themselves up into a ball, and thus fall asleep. They not unfrequently swim on their back, and so near the surface of the water that their hind-feet are quite dry. They cut through the waves with great rapidity, frequently swimming at the rate of seven or eight miles an hour. Their cubs are as sportive as puppies, have mock fights, and tumble one another about on the ground. The male parent looks on with a sort of complacency, parts them, licks and kisses them, and, as it is said, seems to take a greater affection to the victor than to the vanquished.

On Behring's Island these animals are found in such numbers as almost to cover the whole shore; and travellers are sometimes obliged, for their own safety, to leave the sands and level country, and go over the rocks and hills. It is, however, remarkable, that they only frequent that part of the coast which lies towards Kamtschatka. In the beginning of June they retire southward, for the purpose of bringing forth their offspring; and return towards the end of August. They seldom produce more than a single young-one at a birth. This they continue to nurse for about three months: at the end of which time it has acquired sufficient strength and activity to provide its own sustenance.

THE BOTTLE-NOSED SEAL.

THE BOTTLE-NOSED SEAL.

The male of this species measures from fifteen to twenty feet in length; and is distinguished from the female by a large snout, projecting five or six inches beyond the extremity of the upper jaw. This snout the animal inflates when he is irritated, thus giving it the appearance of an arched or hooked nose. The skin is thinly

covered with a rust-colored hair. The feet are short, and the hinder ones so webbed as to appear like fins. In the upper jaw there are four front teeth, and in the lower jaw only two.

So great is the quantity of fat, or blubber, contained between the skin and the flesh of these animals, that, in the largest of them, it is at least a foot in depth. Consequently, when in motion, they have somewhat the appearance of immense skins filled with oil; the tremulous motion of the blubber being plainly discernible beneath the surface.

They are of a lethargic disposition, and when at rest are not easily disturbed. It is not difficult to kill them; for, in consequence of their sluggish and unwieldy motions, they are incapable either of escaping or resisting. A sailor, however, was one day carelessly employed in skinning a young one that he had just killed, when the female, from whom he had taken it, came upon him unperceived, and bit him so dreadfully, that he died a little while afterwards.

These animals seem to divide their time almost equally between the land and sea. They continue at sea during the summer, and coming on shore at the commencement of winter, reside there all that season. When on shore, they feed on the grass and verdure which grow on the banks of the fresh-water streams; and, when not employed in feeding, they sleep in herds, in the most miry places they can find. Like the Ursine Seals, each herd seems to be under the direction of a large male; which the seamen ludicrously style the Bashaw, from the circumstance of his driving away females from the other males, and appropriating them to himself. These Bashaws, however, do not arrive at this envied superiority without many bloody and dreadful contests, of which their numerous scars generally bear evidence. Their battles are frequent, and sometimes extremely furious.

It has been remarked, that each herd places at a distance some of the males as sentinels; and that these never fail to give the alarm if any thing hostile approaches. The noise they make for this purpose is very loud, and may be heard at a considerable distance. Their usual voice is a kind of loud grunting; or sometimes a snorting, like that of horses in full vigor.

The Bottle-nosed Seals are usually found in the seas around New Zealand, the Island of Juan Fernandez, and the Falkland Islands.

THE LEONINE SEAL.

The Leonine Seal has a large head and eyes. The nose turns up, somewhat like that of a Pug Dog. The ears are conical and erect and, along the neck of the male, there is a mane of stiff curled hair. The whole neck is covered with long, waved hair, not much unlike that of the Lion. The hair of the other parts of the body is short and red: that of the female yellowish. At a certain age these animals become gray. Their feet resemble those of the Ursine Seal. The weight of a large male is about 1600 pounds. The males are

HUNTING THE SEAL ON THE ICE.

frequently from sixteen to eighteen feet long, but the females seldom exceed eight.

Leonine Seals are found in great numbers on the eastern shores of Kamtschatka. They inhabit chiefly the most rocky situations; and, by their loud and tremendous roaring, are frequently of use during foggy weather, in giving warning to sailors of their near approach to the coast.

If a human being appear among them, they immediately run off toward the sea, and when attacked or disturbed in their sleep, they seem to be seized with horror; in their ludicrous attempts to escape, they fall into the utmost confusion, and tumble down, and tremble so violently, that they are scarcely able to use their limbs. When, however, they find it impossible to escape without fighting, they become desperate, and turn on their assailant with vast noise and fury. But when they find themselves uninjured, and that there is no intention to assail them, they soon overcome their fear of mankind. Steller, when he was on Behring's Island, lived for six days in a hovel that was surrounded by these animals. They were soon reconciled to him, would observe, with great apparent calmness, what he was doing; would lie down near him, and even suffer him to take hold of and play with their cubs.

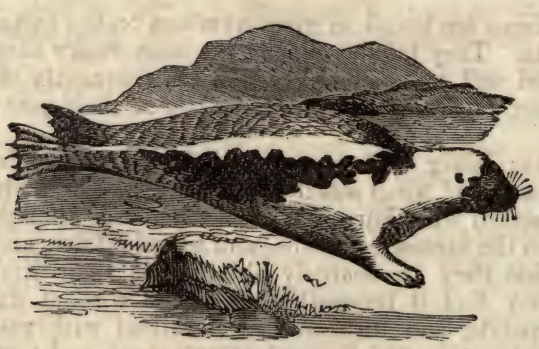
The Leonine Seals have often severe disputes for the possession of their females; and Steller had an opportunity of witnessing several of their conflicts. He once was witness to a duel between two males which lasted for three days, and in which one of them received above a hundred wounds. The Ursine Seals that were among them never interfered, but always hastened out of the way of their battles.

The females bring forth a single young-one at a birth. The cubs are not sportive, like most other young animals, but seem stupified by much sleep. They are often taken by their parents into the water, and taught to swim; and when they are tired, they climb on thei-

mother's back. It is said, however, that the males frequently push them off again, in order to habituate them to this exercise.

The chase of these animals is esteemed by the Kamtschadales an occupation of the highest honor. When they find one of them asleep, they approach it against the wind; strike a harpoon, fastened to a long cord, into its breast, and run off with the utmost precipitation. The other end of the cord, being fastened to a stake, prevents the animal from running entirely away, and they principally effect his destruction by flinging their lances into him, or shooting him with arrows. As soon as he is exhausted, they venture near enough to kill him with their clubs. When a Leonine Seal is discovered alone on the rocks, they shoot him with poisoned arrows. Immediately he plunges into the sea; but, unable to bear the poignancy of his wounds in the salt water, swims in agony to the shore. If opportunity allow, they transfix him with their lances; if not, they leave him to die of the poison.

During about two months of the summer, the full-grown males abstain almost entirely from eating, and indulge themselves in indolence and sleep. Their voice is not much unlike the deep bellowing of a bull. The young-ones bleat like sheep.



HARP SEAL.

There are many Seals known, among which are the Sea Leopard, a spotted species; the Harp Seal, so called because the markings on its back something resemble a lyre; and the Sea Lion.

THE DOG TRIBE.

THE generic characters of the Dog are these:—He has six cutting teeth in the upper jaw; and those at the sides are longer than the intermediate ones, which are lobated. In the under jaw there are also six cutting teeth; the lateral ones lobated. There are four canine-teeth, one on each side, both above and below; and six or seven grinders.

All the animals belonging to this tribe are carniverous, swift of foot, and well adapted to the chase; but, when urged by necessity, they are able to subsist on vegetable food. In a wild state they usually associate in immense packs. These are often so powerful as to make war with, and overcome, many beasts of prey which, individually, are much more strong and ferocious than themselves.

The females produce from three or four, to eight or ten young-ones, at a litter.

THE COMMON DOG.

To no animal are mankind so much indebted for services and affection as to the Dog. Among all the various orders of brute creatures, none have hitherto been found so entirely adapted to our use, and even to our protection, as this. There are many countries, both of the old and new continent, in which, if man were deprived of this faithful ally, he would unsuccessfully resist the foes that surround him, seek-

COMMON DOG.

ing opportunities to destroy his labor, attack his person, and encroach upon his property. His own vigilance, in many situations, could not secure him, on the one hand, against their rapacity, nor on the other against their speed. The Dog, more tractable than any other animal, conforms himself to the movements and habits of his master. His diligence, his ardor, and his obedience, are inexhaustible; and his disposition is so friendly, that, unlike every other animal, he seems to remember only the benefits he receives; he soon forgets our blows; and instead of discovering resentment while we chastise him, he exposes himself to torture, and even licks the hand from which it proceeds.

The care of the Dog in directing the steps of the blind, affords an instance of his obedience and fidelity, which is peculiarly deserving of notice. There are few persons who have not seen some of these unfortunate objects thus guided along through the winding streets of a town or city, to the spot where they are to supplicate charity of passengers. In the evening the Dog safely conducts his master back, and receives as the reward of its services, that scanty pittance which wretchedness can bestow. Mr. Ray, in his Synopsis of Quadrupeds, informs us of a blind beggar who was thus led through the streets of Rome by a middle-sized Dog. This Dog, besides leading his master in such a manner as to protect him from all danger, had learned to distinguish both the streets and houses where he was accustomed to receive alms twice or thrice a week. Whenever the animal came to any one of these streets, he would not leave it till a call had been made at every house where his master was usually successful in his petitions. When the beggar began to ask alms, the Dog lay down to rest; but the man was no sooner served or refused, than the dog rose spontaneously, and, without either order or sign, proceeded successively to all the other houses. "I observed, not without pleasure and surprise, (says Mr. Ray,) that when a halfpenny was thrown from a window, such were the sagacity and attention of this Dog, that he went about in quest of it, took it from the ground with his mouth, and put it into the blind man's hat. Even when bread was thrown, the animal would not taste it, unless he received it from the hand of his master."

It is possible to train these animals in such a manner that they may be entrusted to go to market with money, on which occasion they will repair to a known shop, and carry home provisions in safety Some years since, a person who lived at the turnpike-house about a mile from Stratford on Avon, had trained a Dog to go to the town for such small articles of grocery as he wanted. A note mentioning the things was tied round the Dog's neck, and in the same manner

the articles were fastened, and the commodities were always brought safe home.

It is recorded of a Dog belonging to a nobleman of the Medici family, that it always attended at its master's table; changed the plates for him; and carried him his wine in a glass placed on a salver, without spilling the smallest drop. This animal would also hold the stirrup in its teeth while his master was mounting his horse.

The sagacity and attention of the Dog are, indeed, so great, that it is not difficult to teach him to dance, hunt, leap, and exhibit a thousand pleasing dexterities. The feats performed by the dancing dogs exhibited some years ago at Sadler's Wells, will be long remembered. After storming a fort, and performing various other exploits, one of them was brought in as a deserter, was shot, and carried off as dead by his companions. The mode in which a Dog is taught to point out different cards that are placed near him, is this. He is first taught, by repeated trials, to know something by a certain mark; and then to distinguish one ace from another. Food is frequently offered to him on a card that he is unacquainted with, after which he is sent to search it out from the pack; and, after a little experience, he never mistakes it. Profiting by the discovery of receiving food and caresses as a reward for his care, he soon becomes able to know each particular card, which, when it is called for, he brings with an air of gaiety, and without any confusion; and in reality, it is no more surprising to see a Dog distinguish one card from thirty others, than it is to see him distinguish in the street his master's door from those of the neighbors.

Plutarch relates, that in the theatre of Marcellus, a Dog was exhibited before the Emperor Vespasian, so well instructed as to excel in every kind of dance. He afterward feigned illness, in a manner so natural as to astonish the spectators. He first exhibited symptoms of pain; then, falling down, as if dead, would suffer himself to be carried about in that state. Afterward, at the proper time, he seemed to revive, as if waking from a profound sleep; and then jumping and sporting about, he showed every demonstration of joy.

But of all the educational attainments by which the Dog has been distinguished, that of learning to speak seems to be the most extraordinary. The French academicians, however, mention a Dog in Germany, which would call, in an intelligible manner, amongst other things, for tea, coffee, or chocolate. The account is from no less eminent a person than the celebrated Leibnitz, who communicated it to the Royal Academy of France. This Dog was of a middling size, and was the property of a peasant in Saxony. A little boy, the peasant's son, imagined that he perceived in the Dog's voice an indistinct resemblance to certain words, and therefore took it into his head to teach him to speak. For this purpose he spared neither time nor pains with his pupil, who was about three years old when this his learned education commenced; and at length he made such progress in language, as to be able to articulate as many as thirty words. Leibnitz declares that he himself heard him speak; and the

French academicians add, that, unless they had received the testimony of so great a man as this, they should scarcely have dared to report the circumstance.

The inhabitants of some countries admire the Dog as food. In the South Sea Islands these animals are fattened with vegetables, which the natives savagely cram down their throats when they will voluntarily eat no more. They are killed by strangling; and the extravasated blood is preserved in cocoa-nut shells, and baked for the table. The negroes of the coast of Guinea are so partial to the flesh of these animals, that they frequently give considerable prices for them: a large Sheep for a Dog was formerly, and probably is now, a common article of exchange. Even the ancients esteemed a young and fat Dog to be excellent eating. Hippocrates ranks it with mutton or pork; and the Romans particularly admired the flesh of sucking whelps.

Dogs are found in a wild state in Congo, Lower Ethiopia, and towards the Cape of Good Hope; in South and North America, New Holland, and several other parts of the world: and the varieties are, perhaps, more numerous of this species, than of any other known animal.

THE SIBERIAN DOG.

The use to which these Dogs are peculiarly applied, is the drawing of sledges over frozen snow, in the various countries where they are found, within the Arctic Circle, and particularly in Siberia and Kamschatka. These sledges generally carry only a single person, who sits sideways. The number of Dogs usually employed is five: four of them are yoked two and two, and the other acts as leader. The reins are fastened, not to the head, but to the collar; and the driver has, therefore, to depend principally on their obedience to his voice. Great care and attention are consequently requisite in training the leader; which, if steady and docile, becomes very valuable: the sum of forty rubles (or ten pounds) is no uncommon price for one of them.

THE SIBERIAN DOG.

The cry of *tagtag*, *tagtag*, turns him to the right; and *hougha*, *hougha*, to the left. The intelligent animal immediately understands the words, and gives to his companions the example of obedience. *Ah*, *ah*, stops the Dogs; and *ha*, makes them set off.

The charioteer carries in his hand a crooked stick, which answers the purpose both of a whip and reins. Iron rings are suspended at the ends of this stick, by way of ornament, and to encourage the

Dogs by the noise; for they are frequently jingled for that purpose. If the Dogs are well trained, it is not necessary for the rider to exercise his voice: if he strike the ice with his stick, they will go to the left; if he strike the legs of the sledge, they will go to the right; and when he wishes them to stop, he has only to place the stick between the snow and the front of the sledge. When they are inattentive to their duty, the driver chastises them, by throwing the stick at them. The dexterity of the charioteers in picking it up again, is very remarkable, and is the most difficult manœuvre in this exercise: nor is it indeed surprising that they should be skilful in a practice, in which they are so essentially interested; for the moment the Dogs find that the driver has lost his stick, unless the leader is both steady and resolute, they set off at full speed, and never stop till either their strength is exhausted, or till the carriage is overturned and dashed to pieces.

The manner in which these animals are generally treated, seems but ill calculated for securing their attachment. During the winter they are fed sparingly with putrid fish; and in summer they are turned loose, to shift for themselves, till the return of the severe season renders it necessary to the master's interest that they should be again taken into custody, and brought once more to their state of toil and slavery. Whilst yoking to the sledge, they utter the most dismal howlings; but, when every thing is prepared, a kind of cheerful yelping succeeds, which ceases the instant they begin their journey.

These animals have been known to perform, in three days and a half a journey of almost two hundred and seventy miles; and horses are perhaps not more useful to Europeans, than these Dogs are to the inhabitants of the frozen and cheerless regions of the North. When, during the most severe storm, their master cannot see the path nor even keep his eyes open, they seldom miss their way; whenever they do this, they go from one side to the other, till, by their smell, they regain it; and when in the midst of a long journey, as it often happens, it is found absolutely impossible to travel any further, the Dogs, lying round their master, will keep him warm, and defend him from danger.

THE SPANIEL.

It is not only in the sports of the field that the Spaniel is of use to mankind; his fidelity and attachment to those from whom he is accustomed to receive attentions, have been celebrated in almost all ages. Of these, there has perhaps been recorded no instance more satisfactory than the following.

THE HUNTING SPANIEL.

Old Daniel, gamekeeper to the Rev. Mr. Corsellis, had reared a Spaniel, which became so fond of him as to be his constant companion both by night and day. Wherever

THE SPANIEL.

the gamekeeper appeared, *Dash* was never far distant; and, in his nocturnal excursions to detect poachers, this Dog was of infinite use to him. At these times the Dog altogether neglected the game; and many poachers were detected and caught in consequence of his sagacity.

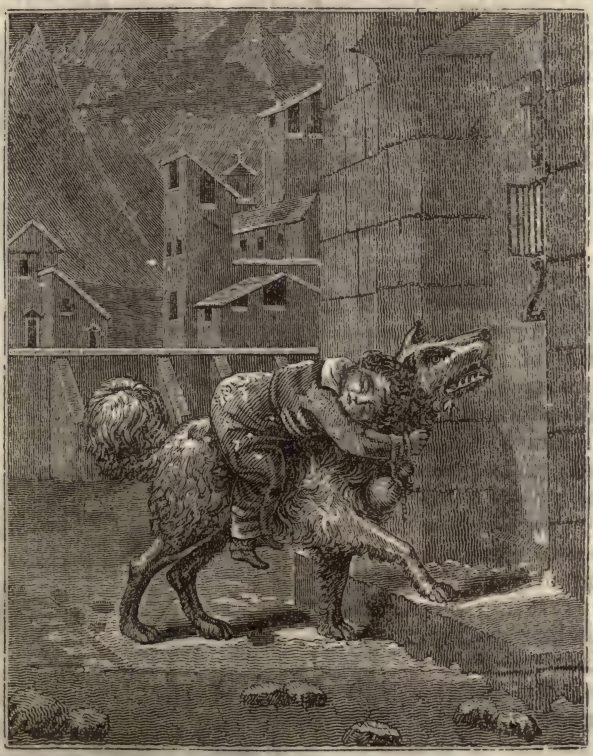
During the last stage of a consumption, which carried his master to the grave, Dash unwearily attended the foot of his bed; and when he died, the Dog would not quit the body, but lay upon the bed by his side. It was with difficulty he was tempted to eat any food; and although, after the funeral, he was taken to the house of Mr. Corsellis, and caressed with all the tenderness which so fond an attachment naturally excited, he took every opportunity to steal back to the room in the cottage where the gamekeeper breathed his last, and where he would sometimes remain for hours. From this room he visited the grave regularly every day, for fourteen days; at the end of which time he died, notwithstanding all the kindness and attention that were shown him.

THE WATER SPANIEL.

The celebrated Mount St. Bernard Dogs, which sometimes save the lives of travellers, is a variety of the Spaniel. England has been famous for producing Dogs of this sort, particular care having been taken to preserve the breed in its utmost purity; so that notwithstanding the name Spaniel is supposed to be derived from Spain, it is more than probable that the English Spaniel (the

most common and useful breed) is indigenous. The fond attachment and timid submission of the Spaniel are proverbial; there are few persons, indeed, who could not bear witness to the truth of the following description given by Mr. Bell: "If punished, it receives the chastisement with submission, and looks in the face of its offended master with an expression of humble sorrow for having been the cause of his anger; and the instant that the punishment is over, it comes courting the caresses of the hand that had inflicted the stripes, and asking him again to be received into favour. At the slightest look of encouragement, its joy at the reconciliation seems to know no bounds and is expressed by the liveliest indications of delight, jumping and fawning upon the person of him who had just before been inflicting bodily pain and mental distress—capering round him, and barking loudly with ecstasy."

MOUNT ST. BERNARD SPANIEL.



MOUNT ST. BERNARD SPANIEL SAVING A CHILD.

The prevailing color is liver and white; sometimes red and white, or black and white; and sometimes deep brown, or black on the face and breast, with a tan spot over each eye.

THE HOUND.

The following anecdotes afford a strong proof of the wonderful spirit of the Hound, in supporting a continuance of exertion Many years since, a very large stag was turned out of Whinfield Park, in the county of Westmoreland, and was pursued by the Hounds, till, by fatigue or accident, the whole pack was thrown out, except two staunch and favorite Dogs, which continued the chase during the greatest part of the day. The stag returned to the park from which he set out; and, as his last effort, leapt the wall, and immediately expired. One of the Hounds pursued him to the wall; but, being unable to get over, he lay down, and almost immediately afterwards died: the other was also found dead at a little distance. The length of this chase is uncertain: but, as they were seen at Red-kirks, near Annan in Scotland (distant by the post-road, about forty-six miles,) it is conjectured that the circuitous course they took could not have measured less than *one hundred and twenty miles!*

HOUND.

In the year 1795, in Cambridgeshire, on two Foxes being found, the Hounds divided, and fifteen couple and a half (which pursued one of the foxes) are supposed to have run nearly thirty miles, in about an hour and three quarters.

THE BLOODHOUND.

Bloodhounds are tall, beautifully formed animals, and usually of a reddish or brown color. With our ancestors the Bloodhound was an animal of great request; and as he was remarkable for the fineness of his scent, he was frequently employed in recovering game that had escaped wounded from the hunter. He would follow, with great certainty, the footsteps of a man to a considerable distance; and, in barbarous and uncivilized times, when a thief or murderer had fled,

CUBAN BLOODHOUND.

this useful creature would trace him through the thickest and most secret coverts; nor would he cease his pursuit till he had taken the felon. For this reason there was a law in Scotland, that whoever denied entrance to one of these Dogs in pursuit of stolen goods, should be deemed accessary to the theft.

In the Spanish West India Islands there are officers called chasseurs, kept in continual employment. The business of these men is to traverse the country with their Dogs, for the purpose of pursuing and taking up all persons guilty of murder, or other crimes; and no activity, on the part of the offenders, will enable them to escape. The following is a very remarkable instance which happened not many years ago.

CHASSEUR.

A fleet from Jamaica, under convoy to Great Britain passing through the Gulf of Mexico, beat upon the north side of Cuba. One of the ships, manned with foreigners, (chiefly renegado Spaniards,) in standing in with the land at night, was run on shore. The officers, and the few British seamen on board, were murdered; and the vessel was plundered by the renegadoes. The part of the coast on which the vessel was stranded being wild and unfrequented, the assassins retired, with their booty, to the mountains; intending to penetrate, through the woods, to some remote settlements on the southern side where they hoped to secure themselves, and elude all pursuit. Early intelligence of the crime had, however, been conveyed to Havana. The assassins were pursued by a detachment of the *Chasseurs del Rey*, with their Dogs; and in

CUBAN BLOODHOUND AND PUPPIES.

the course of a very few days they were every one apprehended and brought to justice.

The Dogs carried out by the *Chasseurs del Rey*, are all perfectly broken in. On coming up with the fugitive, they bark at him till he stops: then they crouch near him, terrifying him with a ferocious growling, if he attempts to stir. In this position they continue barking, to give notice to the chasseurs, who come up and secure their prisoner.

CUBAN BLOODHOUND.

Each chasseur can only hunt with two Dogs. These people live with their Dogs, and are inseparable from them. At home the animals are kept chained; and when walking out with their masters, they are never unmuzzled nor let out of ropes, but for attack.

Bloodhounds were formerly used in certain districts lying between England and Scotland, that were much infested by robbers and murderers; and a tax was laid on the inhabitants, for keeping and maintaining a certain number of these animals. But as the arm of justice now extended over every part of the country, and as there are now no secret recesses where villany can be concealed, their services in this respect are become no longer necessary.

ENGLISH BLOODHOUND.

Some few of these Dogs, however, are kept in the northern parts of the kingdom, and in the lodges of the royal forests; where they are used in pursuit of deer that have been previously wounded. They are also sometimes employed in discovering deer-stealers, whom they infallibly trace by the blood that issues from the wounds of their victims.

A very extraordinary instance of this occurred in the New Forest, in the year 1810, and was related to me by the Right Hon. G. H. Rose. A person, in getting over a stile into a field near the forest, remarked that there was blood upon it. Immediately afterwards he recollected that some deer had been killed, and several sheep stolen in the neighborhood: and that this might possibly be the blood of one that had been killed in the preceding night. The man went to the nearest lodge to give information; but the keeper being from home, he was under the necessity of going to Rhinefield Lodge, which was at a considerable distance. Toomer, the under-keeper, went with him to the place, accompanied by a Bloodhound. The Dog, when brought to

the spot, was laid on the scent; and, after following, for about a mile, the track which the depredator had taken, he came at last to a heap of furze faggots belonging to the family of a cottager. The woman of the house attempted to drive the Dog away, but was prevented; and, on the faggots being removed, a hole was discovered in the ground, which contained the body of a Sheep that had recently been killed, and also a considerable quantity of salted meat. The circumstance which renders this account the more remarkable is, that the Dog was not brought to the scent until more than sixteen hours had elapsed after the man had carried away the Sheep.

AFRICAN BLOOD HOUND.

Another instance of the acuteness of scent in these Dogs, is related by the Hon. Robert Boyle. In order to make trial whether a young Bloodhound was well instructed, he says, that a person of quality caused one of his servants to walk to a town four miles distant, and afterwards to a market-town three miles further. The Dog, without seeing the man he was to pursue, followed him, by the scent, to the above-mentioned places, and this notwithstanding a great multitude of market-people who went along the same road, and of travellers who had occasion to cross it. When the Bloodhound came to the chief market-town, he passed through the streets without taking notice of the people there; nor did he cease his pursuit, till he had reached the house where the man whom he sought was concealed.

SPANISH BLOODHOUND.

There is an African and also a Spanish variety of the Bloodhound

THE NEWFOUNDLAND DOG.

The great strength and docility of these dogs render them extremely useful to the inhabitants of several parts of the island of Newfoundland.

who employ them in bringing down wood, on sledges, from the interior of the country to the seacoast. Four Newfoundland Dogs yoked to a sledge, are able, with apparent ease, to draw three hundred weight of wood, for several miles. Their docility is as important to their owners as their strength; for they frequently perform these services without a driver. As soon as they are relieved of their load at the proper place, they return in the same order to the woods from which they were dispatched, and where their labors are commonly rewarded with a meal of dried fish.

NEWFOUNDLAND DOG.

In many places about Quebec, Professor Kalm saw Dogs employed to fetch water from the rivers. He one day saw two great Dogs yoked to a cart. They were neatly harnessed like Horses, and had bits in their mouths. In the cart was a barrel. The Dogs were directed by a boy, who ran behind the cart, and as soon as they came to the river, they jumped into it of their own accord. When the barrel was filled, the Dogs drew their burden up the hill again to the house from which they came. During his stay at Quebec, the professor frequently saw Dogs employed in this manner. The boys that attended them had great whips, with which they occasionally struck the Dogs to make them go on. Mr. Kalm saw these Dogs also employed in drawing wood; and, in winter, it is customary in Canada for travellers to yoke Dogs to sledges that are made to hold their clothes, provisions, and other necessaries. Formerly, before Horses came much into use, most of the land-carriage of Canada was performed by Dogs.

These animals can swim extremely fast, and with great ease; and their extraordinary sagacity and attachment render them, in particular situations, highly valuable.

In the summer of 1792, a gentlemen went to Portsmouth for the benefit of sea-bathing. He was conducted, in one of the machines, into the water; but, being unacquainted with the steepness of the shore, and unable to swim, he found himself, the instant he quitted the machine, nearly out of his depth. The state of alarm into which he was thrown, increased his danger; and, unnoticed by the person who attended the machine, he unavoidably would have been drowned, had not a large Newfoundland Dog, which by accident was standing on the shore and observed his distress, plunged in to his assistance. The Dog seized him by the hair, and conducted him safely to land.

The gentleman afterwards purchased the Dog at a high price; and preserved him as a treasure of equal value with his whole fortune.

During a severe storm, in the winter of 1789, a ship belonging to Newcastle was lost near Yarmouth; and a Newfoundland Dog alone escaped to shore, bringing in his mouth the captain's pocket-book. He landed amidst a number of people, several of whom in vain attempted to take from him his prize. The sagacious animal, as if sensible of the importance of the charge, which, in all probability, was delivered to him by his perishing master, at length leapt fawningly against the breast of a man who had attracted his notice among the crowd, and delivered the book to him. The Dog immediately afterwards returned to the place where he had landed, and watched with great attention for all the things that came from the wrecked vessel, seized, and endeavored to bring them to land.

A gentleman, walking by the side of the river Tyne, observed, on the opposite side, that a child had fallen into the water: he pointed out the object to his Dog, which immediately jumped in, swam over, and catching hold of the child with his mouth, landed it safely on the shore.

Some years ago, a waterman, whose name was Carr, laid a wager that himself and his Newfoundland Dog, would both jump from the centre arch of Westminster Bridge, and would land at Lambeth within a minute of each other. He jumped off first, and the Dog immediately followed him; but the latter not being in the secret, and seeing his master apparently plunging about in the water, seized him by the neck, and dragged him to shore to the no small diversion of an immense crowd of spectators.

THE MASTIFF.

THE MASTIFF.

Mastiffs are peculiar to our country, where they are principally of use as watch-dogs; a duty which they discharge not only with fidelity, but frequently with judgment. Some of them will suffer a stranger to come into the enclosure which they are appointed to guard, and will go peaceably along with him through every part of it, so long as he continues to touch nothing; but the moment he attempts to lay hold of any of the goods, or endeavors to leave the place, the animal informs him, first by gentle growling, or, if that be ineffectual, by harsher means, that he must

neither do mischief or go away. He seldom uses violence unless resisted; and even in this case he will sometimes seize the person, throw him down, and hold him there for several hours, or until relieved, without biting him.

A most extraordinary instance of memory in a Mastiff is related by M. D'Obsonville. This Dog, which he had brought up in India from two months old, accompanied him and a friend from Pondicherry to Benglour, a distance of more than three hundred leagues. "Our journey," he observes, "occupied nearly three weeks; and we had to traverse numerous plains and mountains, and to ford rivers, and to go along several by-paths. The animal which had certainly never been in that country before, lost us at Benglour, and immediately returned to Pondicherry. He went directly to the house of M. Beylier, then commandant of artillery, my friend, and with whom I had generally lived. Now the difficulty is, not so much to know how the Dog subsisted on the road, (for he was very strong, and able to procure himself food,) but how he could so well have found his way, after an interval of more than a month! This was an effort of memory greatly superior to that which the human race is capable of exerting."

The Mastiff is an excessively bold and courageous animal. Stow relates an instance of a contest between three Mastiffs and a Lion, in the presence of King James the First. One of the Dogs being put into the den, was soon disabled by the Lion, which took him by the head and neck, and dragged him about. Another Dog was then let loose, and was served in a similar manner. But the third, on being put in, immediately seized the Lion by the lip, and held him for a considerable time; till, being severely torn by his claws, the Dog was obliged to quit his hold. The Lion, exhausted by the conflict, would not renew the engagement; but, taking a sudden leap over the Dogs, fled for safety into the interior part of his den.

The Mastiff, as if conscious of his superior strength, has been known to chastise, with great dignity, the impertinence of an inferior. A large Dog of this kind, belonging to the late M. Ridley, Esq., of Heaton, near Newcastle, being frequently molested by a mongrel, and teased by its continual barking, at last took it up in its mouth by the back, and with great composure dropped it over the quay into the river, without doing any further injury to an enemy so contemptible.

THE BULL-DOG.

When its energies are completely roused, this is doubtless one of the fiercest, and at the same time one of the most courageous, of all animals. His valor in attacking a bull is well known. His fury in seizing, and his invincible obstinacy in maintaining his hold, are truly astonishing. Some years ago, at a Bull-baiting in the North of England, when that barbarous custom was more prevalent than it is at present, a young man, confident of the courage of his Dog, laid a trifling wager that he would, at separate times, even cut off all the

animal's feet; and that, after every successive amputation, he would attack the Bull. The unmanly and horrible experiment was tried;

BULL-DOG.

and the Dog, apparently inattentive to the injury he had received, continued to seize the Bull with the same eagerness as before.

THE TERRIER.

TERRIER.

There are few animals endowed with more obstinate courage than the Terrier. To the smaller quadrupeds, such as rats, mice, stoats, and some others, he seems to be the natural enemy, and attacks them furiously whenever and wherever he happens to see them. He is not afraid even of the badger, and, though sometimes roughly used by that animal, will combat him with determined fortitude.

An anecdote related by Mr. Hope, and well authenticated by other persons, shows also that the Terrier is both capable of resentment when injured, and of great contrivance to accomplish it. A gentleman of Whitmore, in Straffordshire, used to go twice a-year to London; and being fond of exercise, generally performed the journey on horseback, accompanied most part of the way, by a faithful little Terrier Dog, which, lest he might lose it in London, he always left to the care of Mrs. Langford, his landlady at St. Alban's; and, on his return he was sure to find his little companion well taken care of. The gentleman calling one time, as usual, for his dog, Mrs. Langford appeared before him with a woful countenance:—"Alas! Sir, your Terrier is lost! Our great house-dog and he had a quarrel; and the poor Terrier was so bitten before we could part them, that I thought he could never have got the better of it. But he crawled out of the yard, and no one saw him for almost a week. He then returned, and brought with him another Dog, bigger by far than ours; and they both together fell on our great Dog, and bit him so unmercifully,

that he has scarcely since been able to go about the yard, or to eat his meat. Your Dog and his companion then disappeared, and have never since been seen at St. Alban's." The gentleman endeavored to reconcile himself to the loss. On his arrival at Whitmore, however, he found his Terrier; and, on inquiring into the circumstances, was informed that the animal had been at Whitmore and had coaxed away the great Dog, who it seems had, in consequence, followed him to St. Alban's, and completely avenged his injury.

The Terriers, says Wood, never grow to any considerable size. There are several breeds of the terriers, among which the English and Scotch are most conspicuous. These dogs are principally used for destroying rats or other vermin, and are so courageous that they do not hesitate to unearth the fox or the badger. Otters are also hunted by them, but prove by no means an easy prey, as their snake-like body, sharp teeth, and amphibious habits, render them very difficult to seize, and their tenacity of life will frequently enable them to escape when the dog considers them dead. The Scotch Terrier is a rough, wiry little dog, with hair hanging over its eyes, so that those organs are hardly visible, and when it is in the water its wetted hair quite obscures its vision. There is a smaller breed of these dogs called the "Skye Terrier," whose principal beauty seems to consist in their ugliness.

THE ENGLISH TERRIER.

THE SCOTCH TERRIER.

Terriers are extremely attached to their master, and are capable of learning many amusing tricks. I had a terrier, said to be of Irish breed, who had imbibed many of the eccentricities of the Irish character. He was particularly fond of terrifying lapdogs, a species of animal which he held in supreme contempt. On one occasion, he met a very fat lapdog, the property of an equally fat old lady, waddling along the street. Rory looked at it for a short time, and then gave it a pat which rolled it over on its back. Its mistress immediately snatched it up, and put it on her muff, whereupon Rory erected himself on his hind-legs, an art which he possessed in great perfection, and walked along by her side, making occasional snatches at the lapdog. The terrified old lady struck at him with her boa, which Rory immediately caught in his mouth, and carried off down the street in an ecstasy of delight, ever and anon tripping over it and rolling head over heels. He had learned to shut the door, ring the

bell, bring the slippers, or put the cat down stairs, which he accomplished by pushing her with his nose down each successive stair. During his residence at College he was accustomed to sit, dressed in a cap and gown, at the breakfast table, where his deportment was always most exemplary, and afforded a good example to many of the guests.

Poor Rory is dead now, but there is a record of his life in the "Sketches and Anecdotes of Animals," by Mr. Wood.

THE SHEPHERD'S DOG.

The Shepherd's Dog is a rough, shaggy animal, with sharp pointed ears and nose. It is an invaluable assistant to the shepherd, as it knows all its master's sheep, never suffers them to stray, and when two flocks have mixed, it will separate its own charge with the greatest certainty. It understands every look and gesture of its beloved master, and drives the flock to any place which he points out. This is the dog alluded to by Burns in the following beautiful passage:—"Man," said he, "is the god of the dog; he knows no other; he can understand no other. And see how he worships him! with what reverence he crouches at his feet! with what love he fawns upon him! with what dependence he looks up to him! and with what cheerful alacrity he obeys him! His whole soul is wrapt up in his god! all the powers and faculties of his nature are devoted to his service! and these powers and faculties are ennobled by the intercourse. Divines tell us that it ought just to be so with the Christian, but the dog puts the Christian to shame."

THE SHEPHERD'S DOG.

THE SHEPHERD'S DOG

THE GREYHOUND.

The Greyhound is the swiftest of all the Dogs, and is principally used in the pursuit of the Hare, which amusement is termed coursing. It has but little delicacy of scent, and hunts almost entirely by sight.

THE GREYHOUND.

The Hare endeavors to baffle it by making sharp turns, which the Dog cannot do on account of its superior size, and has therefore to take a circuit, during which the Hare makes off in another direction. The Hare also has the property of stopping almost instantaneously when at full speed. It puts this manœuvre into force, when it is nearing its favorite hiding place. It induces the Dog to spring upon it, and then suddenly checks itself. The Dog is carried twenty or thirty yards forward by its own momentum, and the Hare springs off to her place of refuge.

At Ashborne, in Derbyshire, there is a public-house sign representing a black and white Greyhound chasing a Hare. One Greyhound was a little in advance of the other, and struck the game so forcibly with its nose that the Hare was thrown over its back into the jaws of the other Greyhound. This animal has been known to exert rather an unexpected talent, viz; retracing a journey during which it had been a close prisoner.

"The celebrated Greyhound, Black-eyed Susan, was brought to Edinburgh from Glasgow in the boot of a coach, on the night of Wednesday, the 13th May, 1835. On the following Sunday evening she made her escape, and in forty-eight hours reached her kennel, eight miles beyond Glasgow, being fifty-two miles in all. The road between Glasgow and Edinburgh she had never travelled on foot, and from the time taken she cannot have come direct; but by what route or process this animal made her point good it is in vain to conjecture."

THE FOXHOUND AND BEAGLE.

The Foxhound and Beagle are not very dissimilar in form or habits. They both follow game by the scent, and are used in hunting. The Foxhound, as its name implies, is used for hunting the Fox, and enters into the sport with extraordinary eagerness. These Dogs are trained with great care; whole books have been written on their education, and men are engaged at high salaries to train them to the sport. England possesses the finest breed of Foxhounds in the world, and certainly no expense is spared to improve them, as one kennel is said to have cost nearly twenty thousand pounds. The height of the Foxhound is about twenty-two inches.

The Beagle is used principally for Hare hunting. It is much smaller than the Foxhound, and not nearly so swift, but its scent is so perfect that it follows every track of the flying Hare, unravels all her windings, and seldom fails to secure her at last. Sportsmen usually prefer the smallest Beagles obtainable. The most valuable pack of these Dogs known, used to be carried to and from the field in a pair of panniers slung across a Horse's back. Unfortunately, this pack was so well known, that numerous were the attempts to gain possession of it. One ill-fated evening, as the Dogs were returning in their panniers after the day's sport, the keeper was decoyed away by some stratagem, and when he returned, his dismay was great to find that the Dogs, panniers, and Horse were all missing. No traces of them were discovered, and it was conjectured that they must have been sold on the Continent.

THE FOXHOUND.

THE BEAGLE.

It is a common custom in the military schools and sometimes at the universities, to follow the Beagle on foot. There has been for several years a society at Oxford, who thus hunt on foot. As too much time would be lost in looking for a living Hare, a dead Rabbit is trailed along the ground, and as its fur has been rubbed with aniseed, the Dogs can follow it easily.

THE POINTER.

The Pointer is used by sportsmen to point out the spot where the game lies. It ranges the fields until it scents the Hare or Partridge lying close on the ground. It then remains still as if carved in stone, every limb fixed, and the tail pointing straight behind it. In this attitude it remains until the gun is discharged, reloaded, and the sportsman has reached the place where the Bird sprung. It then eagerly searches for the game, and brings the Bird in its mouth.* There are many anecdotes of its intelligence, among which the following is not the least interesting.

* Many Dog-trainers do not permit the Dog even to touch the Bird.

In 1829, Mr. J. Webster was out on a shooting party near Dundee, when a female Pointer, having traversed the field which the sportsmen were then in, proceeded to a wall, and, just as she made the leap, got the scent of some Partridges on the opposite side of the wall. She hung by her fore-feet until the sportsmen came up; in which situation, while they were at some distance, it appeared to them that she had got her leg fastened among the stones of the wall, and was unable to extricate herself. But, on coming up to her, they found that this singular circumstance proceeded from her caution, lest she should flush the Birds, and that she had thus purposely suspended herself in place of completing her leap.

THE POINTER.

When badly trained, this Dog is apt to make very absurd mistakes. A young Pointer belonging to a friend disappointed him by most perversely pointing at a Pig; and on another occasion was discovered feasting on a dead Sheep instead of attending to its business.

THE IRISH GREYHOUND.

The Irish Greyhound is one of the largest, if not the very largest Dog known. He was used in extirpating Wolves from Ireland. This species is nearly extinct, only a very few specimens being left.

THE IRISH GREYHOUND.

In 1790, Mr. Lambert saw eight of them in the possession of Lord Altamont. They were the sole remnant of their race, which had then degenerated: the hair was short and smooth, brown and white, or black and white. One of the largest dogs was sixty-one inches long from the muzzle to the point of the tail, which latter was, of itself, seventeen inches and a half in length. The ears were six inches long and pendulous. The height from the toe to the top of the fore shoulders, twenty-eight inches and a half; the circumference of the breast thirty-five inches, and of the belly, twenty-six. All were good tempered; and in former generations the race are said to have borne a great resemblance to the Greyhound. If this latter fact is well authenticated, it throws some light upon the progressive history of this first division; for the dogs of this subdivision stand something intermediate between the Greyhounds, properly so called, and the wild dogs; and so, if there is a return from the Greyhound

to the type of this subdivision, there might be a return in this to the type of the wild dog.

There are dogs evidently resembling these in other countries, such as the large and rough Greyhound of Russia, and that of the low lands of Scotland; but a particular account of them would not add much to the natural history of the genus.

THE DALMATIAN DOG.

DALMATIAN DOG.

The Dalmatian Dog is of an elegant form and beautifully spotted all over. It is called the Coach from its fondness for running under and near carriages. It is of little use and serves merely as an ornament to a gentleman's equipage.

THE ITALIAN WOLF DOG

The Italian Wolf Dog is a very large and powerful animal of a beautiful form and perfectly white. As its name indicates it is used for protecting the flocks of the peasantry from the ravages of Wolves.

ADDITIONAL ANECDOTES RESPECTING DOGS.

A grocer in Edinburgh had a Dog, which for some time amused and astonished the people in the neighborhood. A man who went through the streets ringing a bell and selling penny pies, happened one day to treat this Dog with a pie. The next time he heard the pieman's bell, the Dog ran to him with impetuosity, seized him by the coat, and would not suffer him to pass. The pieman, who understood what the animal wanted, showed him a penny, and pointed to his master, who stood at the street-door and saw what was going on. The Dog immediately supplicated his master by many humble gestures and looks. The master put a penny into the Dog's mouth, which he instantly delivered to the pieman, and received his pie; and this traffic between the pieman and the grocer's Dog, continued to be daily practised for many months.

At a convent in France, twenty paupers were served with a dinner at a certain hour every day. A Dog belonging to the convent did not fail to be present at this regale, to receive the scraps which were now and then thrown to him. The guests, however, were poor and hungry, and of course not very wasteful; so that their pensioner did little more than scent the feast of which he would fain have partaken. The portions were served by a person, at the ringing of a bell, and delivered out by means of what in religious houses is called a *tour;* a machine like the section of a cask, that, by turning round upon a pivot, exhibits whatever is placed on the concave side, without discovering the person who moves it. One day this Dog, which had only received a few scraps, waited till the paupers were all gone, took the rope in his mouth and rang the bell. His stratagem succeeded. He repeated it

the next day with the same good fortune. At length the cook, finding that twenty-one portions were given out instead of twenty, was determined to discover the trick; in doing which he had no great difficulty; for, lying in wait, and noticing the paupers as they came for their different portions, and that there was no intruder except the Dog, he began to suspect the truth; which he was confirmed in when he saw the animal continue with great deliberation till the visitors were all gone, and then pull the bell. The matter was related to the community; and to reward him for his ingenuity, the Dog was permitted to ring the bell every day for his dinner, on which a mess of broken victuals was always afterwards served out to him.

Mr. C. Hughes, a country comedian, had a wig which generally hung on a peg in one of his rooms. He one day lent the wig to a brother player, and some time afterwards called on him. Mr. Hughes had his Dog with him, and the man happened to have the borrowed wig on his head. Mr. Hughes stayed a little while with his friend; but, when he left him, the Dog remained behind. For some time he stood, looking full in the man's face; then, making a sudden spring, he leaped on his shoulders, seized the wig, and ran off with it as fast as he could; and when he reached home, he endeavored, by jumping, to hang it up in its usual place. The same Dog was one afternoon passing through a field near Dartmouth, where a washer-woman had hung out her linen to dry. He stopped and surveyed one particular shirt with attention; then seizing it, he dragged it away through the dirt to his master, whose shirt it proved to be.

In the year 1791, a person went to a house in Deptford, to take lodgings, under pretence that he had just arrived from the West Indies; and, after having agreed on the terms, said he should send his trunk that night, and come himself the next day. About nine o'clock in the evening, the trunk was brought by two porters, and was carried into a bed-room. Just as the family were going to bed, their little house-dog, deserting his usual station in the shop, placed himself close to the chamber-door, where the chest was deposited, and kept up an incessant barking. The moment the door was opened, the Dog flew to the chest, against which it scratched and barked with redoubled fury. They attempted to get the Dog out of the room, but in vain. Calling in some neighbors, and making them eye-witnesses of the circumstance, they began to move the trunk about; when they quickly discovered that it contained something that was alive. Suspicion becoming very strong, they were induced to force it open; when, to their utter astonishment, they found in it their new lodger, who had thus been conveyed into the house with the intention of robbing it.

A Dog that had been the favorite of an elderly lady, discovered, some time after her death, the strongest emotions at the sight of her picture, when it was taken down to be cleaned. Before this, he had never been observed to notice the painting. Here was evidently a case either of passive remembrance, or of the involuntary renewal of former impressions. Another Dog, the property of a gentleman that died, was given to a friend in Yorkshire. Several years afterwards, a brother from the West Indies paid a short visit at the house where

the Dog then was. He was instantly recognized, though an entire stranger, in consequence, probably, of a strong personal likeness. The Dog fawned upon him, and followed him with great affection to every place where he went.

THE WOLF.

The Wolf is larger, stronger, and more muscular than the Dog. His color is generally pale grey.

These animals are natives of almost all the temperate and cold regions of the globe; and they were formerly so numerous in England, that King Edgar commuted the punishment for certain offences into a requisition of a certain number of Wolves' tongues from each criminal; and he converted a heavy and oppressive tax on one of the Welsh princes, into an annual tribute of three hundred Wolves' heads.

THE WOLF.

It appears from Hollinshed, that Wolves were very noxious to the flocks in Scotland, in 1577; nor were they entirely destroyed till about a century afterwards, when the last Wolf fell in Lochabar, by the hand of Sir Ewen Cameron of Lochiel. In ancient times, every Scots baron was obliged, by the law, to hunt the Wolf four times a year, attended by all his servants; and every sheriff, with all the barons and freeholders of his county, was annually obliged to have three great Wolf-huntings, for the purpose of thinning the race of these destructive animals.

When pressed by hunger, the Wolf, though naturally a coward, becomes courageous from necessity: he then braves every danger, and will venture to attack even the horse or the buffalo. Sometimes whole droves of Wolves descend upon the Sheep-folds; and, digging the earth under the doors, enter with dreadful ferocity, and put to death every living creature before they depart.

> "By wintry famine roused, from all the tract
> Of horrid mountains which the shining Alps,
> And wavy Apennine and Pyrennees
> Branch out stupendous into distant lands,
> Cruel as death! and hungry as the grave
> Burning for blood! bony, gaunt, and grim
> Assembling Wolves, in raging troops, descend;
> And, pouring o'er the country bear along,
> Keen as the North wind sweeps the glossy snow:
> All is their prize."

Although the Wolf is the most gluttonous of quadrupeds, devouring, when excited by hunger, even his own species, yet his rapacity does not exceed his cunning: always suspicious and mistrustful, he imagines every thing he sees is a snare laid to betray him. If he find a reindeer tied to a post, to be milked, he dares not approach, lest the animal should be placed there only to entrap him; but no sooner is the deer set at liberty, than he instantly pursues and devours it. Such,

WOLVES ATTACKING A HORSE.

however, is his extreme cowardice, that, should the deer stand at bay, and act on the defensive, he is at once intimidated. Wolves have not unfrequently been caught in pit-falls, along with other beasts, which their fears, even in this confined situation, have not permitted them to attack. Instances have occurred of peasants falling into these traps, and sitting quietly *tete-a-tete*, with a Wolf, until released by the hunter.

So cautious are these animals in their attack, that, in several parts of the continent, if a man has to traverse alone the forests and wilds, where they are prowling in search of prey, he can sufficiently defend himself against their voracity by only a slight rope, and a bundle of

straw or twigs trailed behind him. Dr. Anderson was assured by a respectable gentleman, a general officer, who was resident in Portugal

WOLVES PURSUING A TRAVELLER.

more than thirty years, that this was the method universally practised by the peasants of that country, and, he believed, with invariable success.

In the northern parts of the world, Wolves sometimes wander upon the ice of the sea, in quest of young Seals, which they catch asleep there. But this repast frequently proves fatal to them; for the ice, being detached from the shore, carries them to a great distance from the land before they are sensible of it. It is said, that, in some years, large districts are thus delivered from these pernicious beasts.

The Wolf has great strength, especially in the muscles of his neck and jaws; he can carry a Sheep in his mouth, and without difficulty can run off with it. When reduced to extremity by hunger, we are told by Pontoppidan that he will swallow mud, in order to allay the uneasy sensations of his stomach. His sense of smelling is peculiarly strong: he scents the track of animals, and follows it with great perseverance. The odor of carrion is perceptible by him at the distance of nearly a mile.

Notwithstanding the savage disposition of the Wolf, he is capable, when taken young, of being tamed. A remarkable instance of this was exhibited in a Wolf belonging to the late Sir Ashton Lever: this animal, by proper education, was entirely divested of the ferocious character of its species. In Eastern countries, and particularly in Persia, Wolves are exhibited as spectacles to the people. When young, they are taught to dance, or rather to perform a kind of wrestling, with a number of men; and Chardin informs us, that a Wolf well educated in dancing is sometimes sold for five hundred French crowns. M. de Buffon brought up several Wolves. During the first year, he states that they were very docile, and even caressing; and, if well fed, would neither disturb the poultry, nor any other animals;

WOLF HUNT.

but, that at the age of eighteen months or two years, their natural ferocity began to appear, and it was requisite to chain them, in order to prevent them from running off and doing mischief. One Wolf, till it was eighteen or nineteen months old, he brought up in a court-yard along with fowls, none of which it ever attacked; but, for its first essay, it killed the whole in one night, yet did not eat any of them.

SHE WOLF AND YOUNG.

The time of gestation of the Wolf is about three months and a half; and when the females are about to bring forth, they search for some concealed place in the inmost recesses of the forests. After having fixed on the spot, they make it smooth and plain for a considerable space, by tearing up with their teeth all the brambles and brushwood. They then prepare a bed of moss, in which they bring forth five or

six young-ones. The mother suckles them for some weeks; but soon teaches them to eat flesh, which she prepares by tearing it into small pieces. She then brings them Field-mice, Hares, Partridges, and Fowls, which they at first play with, and then kill. About six weeks after their birth the young-ones leave their den, and follow the mother,

WOLVES ATTACKING A SLEIGH-RIDING PARTY.

who leads them abroad to some neighboring pool to drink; she conducts them back again, or, when danger is apprehended, obliges them to conceal themselves elsewhere. When they are attacked, she defends them with intrepidity; losing, in this case, every sense of danger, and becoming perfectly furious until they are again in safety.

Of the Wolf there is nothing valuable but his skin, which makes a warm and durable fur. His flesh is so bad, that it is rejected with abhorrence by all other quadrupeds. The smell of his breath is excessively offensive; since, to appease hunger, he swallows, almost indiscriminately, every thing he can find: corrupted flesh, bones, hair, and skins half tanned, and even covered with lime. In short, the Wolf is in an extreme degree disgusting: his aspect is savage, his voice dreadful, his stench insupportable, his disposition perverse, and his manners brutal and ferocious.

THE STRIPED HYENA.

The Striped Hyena is about the size of a large Dog, of a pale greyish-brown color, and marked across with several distinct blackish bands. The hair of its neck is erect, and is continued in a bristly mane along the back. The tail is short and very bushy. The head

is broad and flat, and the eyes have an expression of great wildness and ferocity.

THE STRIPED HYENA.

The ancients entertained many absurd and unaccountable notions respecting this animal. They believed that its neck consisted of but one bone, which was without a joint; that it every year changed its sex that it could imitate the human voice; and that it had thus the power of charming the shepherds, and riveting them to the place on which they stood.

Hyenas, which are natives of Asiatic Turkey, Syria, Persia, and many parts of Africa, generally inhabit caverns and rocky places; prowling about in the night to feed on the remains of dead animals, or on whatever living prey they can seize. They violate the repositories of the dead, and greedily devour the putrid bodies. They likewise prey on cattle, and frequently commit great devastation among the flocks; yet, when other provisions fail, they are able to subsist on the roots of plants, and on the tender shoots of the palm-trees. They sometimes assemble in troops, and follow the march of an army, in order to feast on the dead bodies of the slain.

The cry of the Hyena is very peculiar. It begins with somewhat like the moaning of the human voice, and ends in a noise like that of a person making a violent effort to vomit. His courage is said to equal his rapacity. He will occasionally act on the defensive, and with great obstinacy, against much larger animals than himself. Kæmpfer relates, that he saw a Hyena which had put to flight two Lions; and that he had frequently known a Hyena to attack the Ounce and the Panther. There is something in the aspect of this animal that indicates a peculiar gloominess and malignity of disposition; and its manners correspond with its appearance. Instances have, however, occurred of the Hyena being tamed. Mr Pennant says, that he saw a Hyena as tame as a Dog; and M. de Buffon, that there was one exhibited at Paris that had been tamed very early, and was apparently divested of all its natural ferocity. In Barbary, Mr. Bruce assures us that he has seen the Moors, in the day-time, take these animals by the ears and haul them along, without their offering any other resistance than that of drawing back.

Mr. Bruce locked up a Goat, a Kid, and a Lamb, all day with a Barbary Hyena, when it was fasting, and in the evening he found each of the animals alive and unhurt; but, on repeating an experiment of this

kind at night, the Hyena ate up a young Ass, a Goat, and a Fox, all before morning. In Barbary, the Hyenas seem to lose their courage, and to fly from man by day; but in Abyssinia, they often prowl about even in the open day, and attack with savage fury every animal they meet with. "These creatures," says Mr. Bruce, "were a general scourge to Abyssinia, in every situation, both of the city and the field; and they seemed to surpass even the sheep in number. From evening till the dawn of day, the town of Gondar was full of them. Here they sought the different pieces of slaughtered carcasses which this cruel and unclean people were accustomed to expose in the streets without burial. Many a time in the night, when the king had kept me late in the palace, on going across the square from the king's house, I have been apprehensive lest they should bite me in the leg. They grunted in great numbers around me, although I was surrounded with several armed men, who seldom passed a night without wounding or slaughtering some of them. One night in Maitsha, being very intent on an observation, I heard something pass behind me towards the bed; but on looking round, could perceive nothing. Having finished what I was then about, I went out of my tent, resolving directly to return; this I immediately did, and in so doing perceived two large blue eyes glaring at me in the dark. I called my servant to bring a light; and we found a Hyena standing near the head of the bed, with two or three large bunches of candles in his mouth. To have fired at him, would have been at the risk of breaking my quadrant or other furniture; and he seemed, by keeping the candles steadily in his mouth, to wish at that time for no other prey. As his mouth was full, and he had no claws to tear with, I was not afraid of him; and with a pike, stuck him as near the heart as I could. It was not until I had done this that he showed any sign of fierceness; but upon feeling his wound, he dropped the candles, and endeavored to run up the shaft of the spear to arrive at me, so that I was obliged to draw a pistol from my girdle and shoot him; and nearly at the same time my servant cleft his skull with a battle-axe. In a word the Hyenas were the plague of our lives, the terror of our night-walks, and the destruction of our Mules and Asses, which above every thing else, are their favorite food."

At Dar-fur, a kingdom in the interior of Africa, the Hyenas come in herds of six, eight, and often more, into the villages at night, and carry off with them whatever they are able to seize. They will kill Dogs and Asses, even within the enclosures of the houses; and they always assemble wherever a dead Camel or other animal is thrown, and, on these occasions, acting in concert, they will drag it to a prodigious distance: nor are they greatly alarmed at the sight of men, or by the report of fire-arms. Mr. Brown was told, that whenever any one of these animals was wounded, its companions always tore it to pieces and devoured it.

A remarkable peculiarity in the Hyena is, that when he is first dislodged from cover, or obliged to run, he always, for a considerable distance, appears lame; and sometimes to such a degree as to induce the spectators to suppose that one of his hind legs is broken; but

after running some time this affection goes off, and he escapes swiftly away. The neck, likewise, is so stiff, that in looking behind, or in snatching obliquely at any object, he is obliged to move his whole body, somewhat in the manner of a hog.

HYENA COUNTERFEITING LAMENESS.

The mode of hunting these animals in Barbary is somewhat extraordinary. A party of ten or twelve persons, accompanied by as many Dogs of various kinds, go to a cavern which they have previously ascertained to be the haunt of a Hyena. One of the party then strips himself naked, and taking in one hand the end of a rope, with a noose to it, he advances gradually into the cave, at the same time speaking gently and in an insinuating tone, pretending to fascinate the Hyena by words. When he reaches the animal, he strokes him down the back, which appears to soothe him. He then dexterously slips the noose round his neck, and, by pulling the rope, indicates, to those on the outside of the cave, and who hold the other end, that it is fixed. Having thrown a cloth over the eyes of the Hyena, he immediately retires behind, and the men pull the rope from without, whilst he urges the animal forward. When they have dragged him to the mouth of the cave, he is attacked and destroyed by the dogs. This is an operation which, if the rope break, is attended with danger to the man who enters the cave; but he is always furnished with a dagger or large knife, for the purpose of defending himself, in case of attack. There are other modes of hunting these stupid animals, particularly in the night, either by dogs or with guns. In the day time they never come out of their den, but sit at the further end of it, staring with their eyes fixed. Mr. Jackson, by whom this account is related, says that, in Barbary, the Hyenas are not very ferocious; that, not being afraid of man, they neither attack nor seek to avoid him. In the Southern Atlas, he states that he has seen them led about even by boys; a rope being fastened round the animal's neck, and on each side a communicating rope being attached to it, three or four yards long, and held by a boy.

Hyenas are to be seen in most of the exhibitions of wild beasts in Great Britain. In confinement they become excessively savage and ferocious. Their jaws are much stronger than those of the generality of their tribe. Some years ago there was one at Exeter 'Change about six months old, so very tame that he was occasionally suffered to come out of his den, and run about the exhibition-room. This animal would allow even strangers to approach and pat him, without exhibiting any symptoms whatever of displeasure; and he seemed fond of playing with any of the dogs that happened to come into the room. Still, however, there was a considerable degree of sullenness and ill-nature in his disposition, which, with his age, appeared every day to increase. After having been at Exeter 'Change about two months, he was sold to Mr. Tennant of Pentonville, a dealer in animals. This person, with only a string fixed to the animal's collar, suffered him

wice or thrice to go out with him into the fields. He was soon afterwards sold to the owner of a caravan, for the purpose of exhibition in the country. From the unusual confinement in this caravan, his disposition almost immediately became fierce, and he would no longer admit of the approach and caresses of the visitors. Indeed, he did not long survive this change of life, but gradually pined away till he died.

The late Mr. John Hunter, the surgeon, had at Earl's Court, a Hyena, about eighteen months old, that was so tame as to admit strangers to approach and touch him. After Mr. Hunter's death, the animal was sold to a travelling exhibitor of animals. For a few months previously to his being carried into the country, he was lodged in the Tower. The keeper of the Tower informed me that he there continued tolerably gentle; so much so, as to allow a person who knew him to enter the den and handle him. When, however, he was confined in the caravan, he soon exhibited symptoms of ferocity equal to those of the most savage Hyenas; and he was at last killed by a tiger, the partition of whose den from his own he had torn down by the enormous strength of his jaws.

The Hyena, in confinement, is allowed about four pounds weight of food in the day; and he laps about three pints of water. The value of a full-grown Hyena for exhibition, is from ten to thirty pounds.

THE SPOTTED HYENA, OR TIGER-WOLF

The Spotted Hyena has a considerable resemblance to the former species; but is larger and the body is marked with numerous roundish black spots. The face and upper part of the head are black; and along the neck extends an upright black mane. The ground-color of the body is reddish brown.

THE SPOTTED HYENA.

Natives of several parts of Africa, but particularly numerous at the Cape of Good Hope, these animals are described to be in the greatest degree cruel, mischievous, and formidable. They have frequently been known to enter the huts of Hottentots in search of prey; and from these they sometimes carry off even children. A Spotted Hyena entered a Negro's house on the coast of Guinea, and laid hold of a girl; and, notwithstanding her utmost resistance, he threw her on his back, holding her fast by one of the legs, and was making off with her, when the men, whom the screams of the girl had roused from sleep, came to her relief. The beast dropped her, and made his escape.

Great numbers of these animals attend almost every dark night about the shambles at the Cape, to carry away the filth and offal left there by the inhabitants; and they are allowed to do this without molestation. The dogs, too, with which at other times they are in continual enmity, do not now molest them; and, on these occasions, it has been remarked that the Hyenas are seldom known to do any important mischief. Thunberg informs us, that they are so excessively bold and ravenous, as sometimes to eat the saddle from under the traveller's head, and to gnaw the shoes on his feet, while he is sleeping in the open air.

They utter the most horrid yells in the night, while prowling about for prey. During the day-time, they remain concealed in holes in the ground, or in clefts of rocks; and in the night they frequently descend upon the sheep-folds, in which, if these be not well defended by dogs, they commit terrible ravages. Some of the inhabitants of the Cape pretend that the Hyena has the power of imitating the cries of other animals, and that, by this means, it often succeeds in decoying lambs, calves, and sheep from the folds. They even assert, that a party of Hyenas half flying and half defending themselves, will sometimes decoy the whole of the dogs from a farm to follow them to a distance; while their companions have an opportunity of issuing from their retreats, and carrying off sufficient booty before the dogs can return to prevent them.

Every kind of animal substance is prize to them; and the gluttony and filthy habits of these beasts, seem a kind interference of Providence, urging them to consume those dead and corrupt bodies, which in hot climates might, otherwise, seriously affect the health and comforts of the people.

Dr. Sparrman relates a story of the Spotted Hyena, for the truth of which he does not altogether vouch; but which is so diverting, that I shall make no apology for introducing it. One night, after a feast near the Cape of Good Hope, an intoxicated trumpeter was carried out of doors to cool and sober him. The scent of this man soon attracted a Tiger-wolf to the spot. The animal threw him on his back, and carried him off towards Talbot Mountain, thinking him a corpse, and consequently a fair prize. In the meantime, however, the drunken musician awaked; and sufficiently sensible to know the danger of his situation, he sounded an alarm with the trumpet, which he carried fastened to his side. The beast, as may easily be imagined, was in his turn not less frightened, and immediately ran away. Another writer observes, that any person but a trumpeter, would, in such a situation, have doubtless furnished the animal with a supper.

The strength of the jaws of the Spotted Hyena is so great, that it is enabled to break in pieces, without difficulty, even the hardest bones. In confiement this animal is usually fed with such bones as are the refuse of other animals; and these are all perfectly digested in his stomach.

The following is a remarkable instance of the enormous powers of these animals. The den of a Spotted Hyena in the Tower wanted some repairs. These the carpenter completed by nailing on the floor

a thick oak plank, seven or eight feet in length, with at least a dozen nails, each longer than the middle finger of the hand. At one end of this plank there was, however, a small piece left that stood up higher than the rest; and the man, not having a proper chisel with him to cut it off, returned to his shop for one. During his absence some persons came in to see the animals, and the Hyena was let down by the keeper from the other part of his den. He had scarcely been in the place an instant, before he espied the piece that was left at the end of the plank, and, seizing it in his teeth, he tore the plank completely up, drawing every nail.

VILLOSE HYENA.

This very animal was, however, much more gentle than most of the individuals of the former species. The keeper could venture to pat and caress him, and even to enter his cage at all times, except when he was feeding. This Hyena did not pay the same respect to *animals* that came in his way. A soldier who some time before had visited the Managerie, brought along with him a terrier dog. The man absurdly held him up to the den of the Hyena; and on seeing the animal, the dog was irritated, barked at him, and in his rage thrust his head between the bars. The furious beast sprung upon him, dragged him into the den, and almost in an instant devoured him. A third kind of Hyena, the Villose, is so called from the roughness of its coat.

THE JACKAL.

The body of the Jackal has a great resemblance to that of the Fox: the head, however, is shorter, the nose blunter, and the legs longer. The tail is thickest in the middle, tapers to a point, and tipped with black. The hair, which is long and coarse, is of a tawny color, and yellowish on the belly. The length of the body is about thirty inches, and of the tail eleven.

THE JACKAL.

In their general habits and economy these animals are much allied to the dog. When caught young they soon become domestic, attach themselves to mankind, wag their tails when pleased, and distinguish

their masters from other persons. They love to be fondled and pat ted with the hand, and when called by name will leap on a table or chair. They readily eat from the hand, drink as dogs do, by lapping; and are fond of playing with dogs. Although carnivorous in a wild state, they will eagerly eat bread.

In the forests of their native countries, the hot and temperate parts of Asia and Africa, these animals associate in packs of from fifty to two hundred; and, like hounds, hunt, during the night, in full cry. They devour poultry and lambs, ravage the streets of villages and the gardens near towns, and are said even to destroy children that are left unprotected. They are so bold and courageous that they will sometimes enter the tent of a traveller while he is asleep, and steal away any thing that is eatable. If animal prey be not to be found, they will feed on roots and fruit. In this case, the most infected carrion comes not amiss to them. They greedily disinter the dead, and devour the most putrid bodies; on which account the graves, in many countries, are made of great depth. They also attend caravans, and follow armies, to feast on the remains of the dead.

In the night their howlings (for their voice is naturally a howl) are dreadful; and when not far distant, these are so horribly loud, that persons can with difficulty hear each other speak. Dillon says, that their voice resembles the cries of many children of different ages mixed together; when one commences, the whole pack immediately afterwards join in concert. During the day-time they are silent. All the animals of the forest are roused by the cries of the Jackal; and the Lion and other beasts of prey, by a kind of instinct attend to these cries as a signal for the chase, and seize such timid animals as fly from the noise. From this circumstance it is that the Jackal has obtained the appellation of the Lion's Provider. Jackals burrow in the earth; and leave their habitations during the night only, to range for prey. The females breed once a year, and produce from six to eight young-ones at a birth.

Such, nearly, is the account given to us by Mr. Pennant: that of M. de Buffon is very different. He says, that these are stupid and voracious animals, and extremely difficult to be tamed; and that with one, which he kept for nearly a year, neither caresses nor food would soften its disposition. It would not allow any one to touch it, and attempted to bite all persons indiscriminately. When suffered to be at liberty, nothing could prevent it from leaping on the tables, and carrying off every eatable it could lay hold of. This writer also informs us, that whenever the Jackal, in a wild state, meets with travellers, it stops to reconnoitre them, without any symptoms of fear; and that, in its excessive voracity, if nothing better lies in its way, it will even eat the leather of harness, or boots and shoes.

Whenever any of these creatures begin to utter their cry, all the rest do the same: so that when one of them has entered into a house to steal, and hears his companions at a distance, he cannot refrain from adding his voice to the number, and is thus sometimes detected.

THE BARBARY JACKAL, OR THALEB.

The Barbary Jackal is about the size of the common Fox, and is of a brownish fawn-color. From behind each ear runs a black line, which divides into two, extending downward along the neck. The tail is bushy, and surrounded by three dusky rings.

These are, in every respect, the most adroit and active animals imaginable. They do not, like the common Jackal, associate in packs, but always live singly. They will venture to approach, even in the open day, the houses near which they have their subterraneous abode; and, carefully concealed beneath the shelter of thick bushes, will frequently creep, without noise, to the out-houses, surprise the poultry, carry off their eggs, and leave no traces of their exploits, but the devastations themselves.

The cunning of these animals is pleasingly depicted in the following narration of M. Sonnini: "One day, as I was meditating in a garden in Egypt, I stopped near a hedge. A Thaleb, hearing no noise, was coming through the hedge towards me; and, when he had cleared himself, was just at my feet. On perceiving me, he was seized with such surprise, that he remained motionless for some seconds, without even attempting to escape, his eyes fixed steadily on me. Perplexity was painted in his countenance, with a degree of expression of which I could not have supposed him susceptible, and which denoted great delicacy of instinct. On my part, I was afraid to move, lest I should put an end to this situation, which afforded me much pleasure. At length, after he had taken a few steps, first towards one side and then the other, as if so confused as not to know which way to get off, and keeping his eyes still turned towards me, he retired; not running, but stretching himself out, or rather creeping with a slow step, setting down his feet one after another with singular precaution. He seemed so fearful of making a noise in his flight, that he held up his large tail, almost in an horizontal line, that it might neither drag on the ground nor brush against the plants. On the other side of the hedge I found the fragments of his meal; it had consisted of a bird of prey, great part of which he had devoured."

The Barbary Jackal is one of the prettiest of quadrupeds; and perhaps would be one of the most amiable, if his tricks, and his talents for depredation, did not bear, greatly too much, the marks of knavery.

THE FOX.

The Fox is a native of almost every quarter of the globe; and is of so wild and savage a nature, that it is impossible fully to tame him. He is esteemed the most sagacious and crafty of all beasts of prey. The former quality he shows in his mode of providing for himself an asylum, where he retires from pressing dangers, dwells, and brings up his young; and his craftiness is discovered by his schemes to catch lambs, geese, hens, and all kinds of small birds.

When it is possible for him conveniently to do so, the Fox forms his burrow near the border of a wood, in the neighborhood of some farm or village. He there listens to the crowing of the Cocks, and the cries of the poultry. He scents them at a distance; he chooses his time with judgment; he conceals his road, as well as his design; he slips forward with caution, sometimes even trailing his body; and seldom makes a fruitless expedition. If he can leap the wall, or creeps in underneath, he ravages the court-yard, puts all to death, and retires softly with his prey; which he either hides under the adjacent herbage, or carries off to his kennel. He returns in a few minutes for more; which he carries off or conceals in the same manner, but in a different place. In this way he proceeds till the progress of the sun, or some movements perceived in the house, warn him that it is time to suspend his operations, and to retire to his den. He plays the same part with the catchers of Thrushes, Woodcocks, and other Birds. He visits their nets and birdlime early in the morning, and carries off successively the Birds which are entangled, concealing them in different places, especially by the sides of highways, in the furrows, and under the herbage of brush-wood, where they are sometimes left two or three days, but where he has no difficulty in finding them when he is in need. He hunts the young Hares in the plains; seizes old ones in their seats; digs out Rabbits in the warrens; discovers the nests of Patridges and Quails, and seizes the mothers on their eggs; and destroys a vast quantity of game. The Fox is an exceedingly voracious animal; and, when other food fails him, he makes war against Rats, Field-Mice, Serpents, Lizards, Toads, and Moles. Of these he destroys great numbers; and this is the only service that he appears to do to mankind. When urged by hunger, he will also eat roots or insects; and the Foxes near the sea coast will devour Crabs, Shrimps, or Shell-Fish. In France and Italy, these animals do incredible mischief by feeding on grapes, of which they are excessively fond.

THE FOX.

We are told by M. de Buffon, that the Fox is so fond of honey, that he sometimes attacks Bee-hives, and the nests of Wasps, for the sake of what he can there find to eat; and that he frequently meets with so harsh a reception, as to oblige him to retire, in order that he may roll on the ground and crush those that are stinging him: but, having thus freed himself from his troublesome companions, he instantly returns to the charge, and at length obliges them to forsake their combs, and leaves these to him as the reward of his victory. When urged by excessive hunger, he will even devour carrion. M de Buffon one evening suspended on a tree, at the height of nine feet some meat, bread, and bones. The Foxes had severe exercise during

the night; for next morning the earth all around was beaten, by their jumping, as smooth as a barn-floor.

The Fox exhibits much cunning in digging young Rabbits out of their burrows. He does not enter the holes; for in this case, he would have to dig several feet through the ground, under the surface of the earth: but he follows the scent of them above, till he comes to the end, where they lie; and then scratching up the earth, he descends immediately upon and devours them.

FOX AT A RABBIT BURROW.

This animal prepares for himself a convenient den, in which he lies concealed during the greatest part of the day. This is so contrived as to afford the best possible security to its inhabitant; being situated under hard ground, the roots of trees, or in the crevices of rocks, and being also furnished with proper outlets, through which he may escape in case of necessity.

The Fox, in this country, is an object of diversion in the chase. When he finds himself pursued, he generally makes towards his hole; and, penetrating to the bottom, lies there till a Terrier is sent in to him. If his den be among rocks or under the roots of trees, he is safe; for the Terrier is no match for him there, and he cannot be dug out by his enemies. When the retreat to his kennel is cut off, his stratagems and shifts to escape are as surprising as they are various. He retreats to the woody parts of the country, and prefers the paths that are most embarrassed with thorns and briers. He runs in a direct line before the Hounds, and at no great distance from them; and, if hard-pushed, seeks the low, wet grounds, as though conscious that the scent does not lie so well there as in other places. When overtaken he becomes obstinately desperate, and bravely defends himself against the teeth of his adversaries, even to the last gasp.

Dr. Goldsmith relates a remarkable instance of parental affection in this animal. A female Fox that had, as it should seem, but one cub was unkennelled by a gentleman's hounds near Chelmsford, and hotly pursued. The poor animal, braving every danger rather than leave her cub behind to be worried by the dogs, took it up in her mouth, and ran with it in this manner for several miles. At last, taking her way through a farmer's yard, she was assaulted by a mastiff; and was at length obliged to drop her cub, which was taken up by the farmer. And we are happy to add, that the affectionate creature escaped the pursuit, and got off in safety. A female Fox was hunted near St. Ives, during three quarters of an hour, and with a cub, about a fortnight old, all the time in her mouth; but this she was at length obliged to leave to the ferocity of her pursuers.

Of all animals, the Fox has the most bright and significant eye. He is remarkably playful; but, like all savage creatures half reclaimed, will bite, on the least offence, even those with whom he is most familiar. He languishes when deprived of liberty; and, if kept too long in a domestic state, generally at last dies of melancholy.

The females seldom produce young-ones more than once in the year; and the usual number is from three to six. If the mother perceive that the place of her retreat is discovered, she carries off her cubs, one by one, to a more secure habitation. The young-ones are brought forth blind, like puppies, and are of a darkish brown color. Foxes grow till they are eighteen months old, and live thirteen or fourteen years. During winter, these animals make an almost continual yelping; but in summer, when they shed their hair, they are for the most part silent.

THE ARCTIC FOX.

The Arctic Fox is smaller than the Common Fox, and of a bluish-grey color, which sometimes changes to white. The hair is very thick, long, and soft. The nose is sharp, and the ears short and almost hid in the fur. The tail is shorter, but more bushy, than that of the Common Fox.

THE ARCTIC FOX.

Steller, the Russian traveller, has given us an ample and most entertaining account of the habits of life and manners of the Arctic Fox. This account appears, indeed, to be much exaggerated; but we know not how to contradict a professed statement of facts, to which a respectable writer informs us that he was an eye-witness.

"During my unfortunate abode (says he) on Behring's Island, I had but too many opportunities of studying the nature of these animals, which far exceed the Common Fox in impudence, cunning, and roguery. They forced themselves into our habitations by night as well as by day, stealing all that they could carry off; even things that were of no use to them, such as knives, sticks, and clothes. They were so ingenious as to roll down our casks of provisions, and then to steal the meat out with such skill, that, at first, we could not bring ourselves to ascribe the theft to them. While employed in stripping an animal of its skin, it has often happened that we could not avoid stabbing two or three Foxes, from their rapacity in tearing the flesh out of our hands. If we buried this flesh ever so carefully, and even added stones to the weight of earth that was upon it, they not only found it out, but with their shoulders pushed away the stones. If, in order to secure it, we put any animal on the top of a high post in the

air, they either dug up the earth at the bottom of the post, and thus tumbled the whole down, or one of them climbed up, and with incredible artifice and dexterity threw down what was upon it.

"They watched all our motions, and accompanied us in whatever we were about to do. If the sea threw up an animal of any kind, they devoured it before we could arrive to rescue it from them: and if they could not consume the whole of it at once, they trailed it off in portions to the mountains, where they buried it under stones before our eyes, running to and fro as long as anything remained to be conveyed away. While this was doing, others stood on guard, and watched us. If they saw any one coming at a distance, the whole troop would combine at once, and begin digging all together in the sand, till even a Beaver or Sea-bear in their possession would be so completely buried under the surface, that not a trace of it could be seen. In the night-time, when we slept in the field, they came and pulled off our night-caps, and stole our gloves from under our heads, with the Beaver-coverings, and the skins that we lay upon. In consequence of this, we always slept with our clubs in our hands, that if they awoke us we might drive them away or knock them down.

"Whenever we made a halt to rest, they gathered around us, and played a thousand tricks in our view, and when we sat still, they approached us so near that they gnawed the thongs of our shoes. If we lay down as if intending to sleep, they came and smelt at our noses, to find whether we were dead or alive. On our first arrival, they bit off the noses, fingers, and toes of our dead, while we were preparing the grave; and they thronged in such a manner about the infirm and sick, that it was with difficulty we could keep them off.

"Every morning we saw these audacious animals patrolling about among the Leonine Seals and Sea-bears, that were lying on the strand; smelling at such as were asleep, to discover whether some one of them might not be dead: if that happened to be the case, they proceeded to dissect him immediately; and soon afterwards were all at work in dragging the parts away. Because the Seals sometimes in their sleep overlaid their young-ones, the Foxes every morning examined the whole herd, one by one, as if conscious of this circumstance, and immediately dragged away the dead cubs from their dams.

"As they would not suffer us to be at rest either by night or day, we became so exasperated against them, that we killed them, young and old, and harassed them by every means we could devise. When we awoke in the morning, there always lay two or three that had been knocked on the head in the preceding night; and I can safely affirm, that, during my stay upon the island, I killed above two hundred of these animals with my own hands. On the third day after my arrival, I knocked down with a club, and within the space of three hours, upwards of seventy of them, and made a covering to my hut with their skins. They were so ravenous, that with one hand we could hold to them a piece of flesh, and with a stick or axe in the other could knock them down.

"Like the Common Foxes, these animals were the most sleek and full of hair in the months of October and November. In January

and February their hair was extremely thick. In April and May they began to shed their coat; in the two following months they had only wool upon them, and appeared as if they went in waistcoats. In June they produced their cubs, nine or ten at a brood, in holes and clefts of the rocks. They were so fond of their offspring, that to scare us away from them, they barked and yelled like Dogs; by which they betrayed their covert; but no sooner did they perceive that their retreat was discovered, than (unless they were prevented) they dragged the young ones away in their mouths, and endeavored to conceal them in some more secret place.

"In heavy falls of snow, these animals buried themselves in that substance, and there lay as long as it continued a sufficient depth. They were able to swim across the rivers with great agility. Though at this time they were found in immense numbers on Behring's Island, they had probably been conveyed thither on the drift-ice from the continent; and, having been afterwards nourished by the great quantity of animal substances thrown ashore by the sea, they had become thus enormously multiplied."

CROSS FOX.

We are informed by Mr. Crantz, that the Arctic Foxes exert a very extraordinary degree of cunning in their mode of feeding on fish. They go into the water, and make a splash with their feet, in order to disturb the fish; and when these come up, they immediately seize them. Charlevoix, apparently alluding to this species, says that they exert an almost incredible degree of cunning in entrapping the different kinds of water-fowl. They advance a little way into the water; and afterwards retire, playing a thousand antics on the banks. The fowl approach; and on their coming near, the Fox ceases, that he may not alarm them, only moving about his tail very gently; the birds are said to be so foolish as to come up and peck at this, when he immediately springs round upon them, and seldom misses his aim.

These animals, which are natives only of the Arctic regions near the Polar Circle, and of the islands in the Frozen and Eastern Ocean, are eagerly pursued for the sake of their skins: the fur of which is light and warm, but not durable. They have at times appeared in such vast numbers in the neighborhood of Hudson's Bay, that four hundred of them have been killed or taken in different ways, between the months of December and March. The Greenlanders sometimes eat

the flesh of the Arctic Fox, which they prefer to that of the hare They also make buttons of the skins; and, splitting the tendons, use them instead of thread.

Among the numerous varieties of the Fox, are the Black, Three-colored, Yellow, Cape, and Cross Fox, all having a general resemblance in their form and habits.

OF THE CAT TRIBE IN GENERAL.

ALL the animals belonging to this tribe have six fore-teeth, the intermediate ones of which are equal. They have also three grinders on each side in both jaws. The tongue is furnished with rough, sharp prickles, that point backwards; and the claws are retractile, or capable of being drawn back so as not to touch the ground: a necessary provision to keep them from being dulled while walking; for, being their principal weapons, as well of offence as defence, they are both hooked and sharp.

GROUP OF ANIMALS OF THE CAT KIND.

This tribe of animals is ferocious, and tolerably swift of foot. They hunt for their prey chiefly in the night, and seize it by surprise; lying in wait till it comes within their reach, and then springing suddenly forward upon it at one leap. While their prey is in sight, they frequently move their tails from side to side, keeping at the same time their eyes steadily fixed on the object. They never adopt vegetable food, except from necessity. Most of them are very agile in climbing trees; and have the remarkable property of alighting on their feet whenever they are thrown or fall from a height, by which means the danger usually attendant on such accidents is often prevented. The females produce a considerable number of young-ones at a birth.

THE LION.

The length of this animal is from six to eight feet; and his tail, which is terminated by a tuft of hair, is alone about four feet long. The general color of his body is a pale tawny, inclined to white beneath. The claws are retractile; not into sheaths, but into the intervals between the toes, by means of a particular articulation of the last joint. The last bone but one, by bending itself outward, gives place

to the last, which is only articulated to it; and to which the claw is fastened so as to bend itself upward and sideways, more easily than downward. So that the bone which is at the end of every toe being almost continually bent upward, the point which rests upon the ground is not the extremity of the toe, but the node of the articulation of the last two bones; and thus, in walking, the claws remain elevated and retracted between the toes. This admirable structure is not found in the great toe, whose last joint bends only downward, because this toe does not naturally rest upon the ground, being considerably smaller than the others.

THE LION.

The Lion is a native of both Africa and Asia.

The form of the Lion is strikingly bold and majestic. His large head, and shaggy pendent mane, his strength of limb, and formidable

A CAPE LION.

countenance, exhibit a picture of terrific grandeur which no words can describe.

His strength is so prodigious, that a single stroke of his paw is sufficient to break the back of a Horse; and one sweep with his tail will throw a strong man to the ground. Kolben says, that, when he comes up to his prey, he always knocks it down dead, and seldom bites it till the mortal blow has been given: this blow he generally accompanies with a tremendous roar.

A Lion at the Cape of Good Hope was once seen to take a Heifer

LION DRAGGING A LARGE ANIMAL.

in his mouth; and though that animal's legs dragged on the ground, yet he seemed to carry her off with as much ease as a Cat does a Rat; he likewise without difficulty leaped over a broad ditch with her. Two yeomen of the Cape of Good Hope being on a hunting-party with several Hottentots, near *Bosheismans-river*, they perceived a Lion dragging a Buffalo from the plain to a wood upon a neighboring hill. They, however, soon forced him to quit his prey, in order to make a prize of it themselves; and found that he had had the sagacity to take out the buffalo's large and unwieldy entrails, in order to be able the more easily to escape with the fleshy part of the carcass. And as soon as he saw, from the skirts of the wood, that the Hottentots had begun to carry off the flesh to the wagons, he frequently peeped out upon them, and probably with no little mortification.

The Lion, unless provoked or extremely hungry, does not attack any animal openly; but, when roused by famine, he is said to fear no danger, and to be repelled by no resistance. The method in which he takes his prey, is, almost always, to spring or throw himself upon it, with one vast bound, from the place of his concealment: yet, if he chance to miss his leap, he will not (as the Hottentots invariably

assured Dr. Sparrman) follow his prey any further; but, as though he were ashamed, turning round towards the place where he lay in ambush, he slowly, and step by step, measures the exact length between the two points, as if to find how much too short, or how much beyond the mark, he had taken his leap. From all the most credible accounts that Dr. Sparrman could collect concerning the Lion, as well as from what he himself saw, he concludes that this beast is a great coward; or, at least, is deficient in courage proportionate to his strength: on the other hand, however, he sometimes shows an unusual degree of intrepidity, of which the following is an instance.

A Lion had broken into a walled enclosure for cattle, and had done considerable damage. The people belonging to the farm were well assured that he would come again by the same way. In consequence of this, they stretched a rope directly across the entrance, to which several loaded guns were fastened in such a manner, that they must necessarily discharge themselves into the Lion's body as soon as he should push against the cord with his breast. But the Lion, which came before it was dark, having probably some suspicions respecting the cord, struck it away with his foot; and without betraying the least alarm in consequence of the reports made by the loaded pieces, went fearlessly on, and devoured the prey he had left untouched before.

Though the Lion generally springs upon his prey from some lurking-place, yet there have been instances where he has deviated from this mode of attack. Dr. Sparrman has mentioned an instance; a Hottentot, perceiving that he was followed by a Lion, and concluding that the animal only waited the approach of night to make him his prey, began to consider what was the best mode of providing for his safety; and at length he adopted the following. Observing a piece of broken ground with a precipitate descent on one side, he sat down by the edge of it; and found, to his great joy, that the Lion also made a halt, and kept at a distance behind him. As soon as it grew dark, the man, sliding gently forward, let himself down a little below the edge of the steep; and held up his cloak and hat on his stick, at the same time gently moving them backward and forward. The Lion, after a while, came creeping towards the object; and, mistaking the cloak for the man himself, made a spring at it, and fell headlong down the precipice.

One of the Namaaqua Hottentots, endeavoring to drive his master's cattle into a pool of water, enclosed between two ridges of rock, espied a huge Lion crouching in the midst of the pool. Terrified at the unexpected sight of such a beast, which seemed to have its eyes fixed upon him, he instantly took to his heels. In doing this, he had presence of mind enough to run through the herd; concluding that, if the Lion should pursue, he would seize upon the first beast that presented itself. In this, however, he was mistaken. The Lion broke through the herd, in pursuit of the Hottentot; who, on turning round, and perceiving that the monster had singled him out, breathless and half dead with fear, scrambled up one of the tree-aloes, in the trunk of which had luckily been cut a few steps, the more readily to come

at some birds'-nests that the branches contained. At the same moment the Lion made a spring at him; but, missing his aim, the animal fell upon the ground. In surly silence he walked round the tree, casting at times a dreadful look towards the poor Hottentot, who had crept behind the nests. It is here requisite to observe, that these nests belong to a small bird called the Sociable Grosbeak, that lives in a state of society with the rest of its species, constructing a whole republic of nests in one clump, and under one cover. One of these collections of nests sometimes extends through a space ten feet in diameter, and contains a population of several hundred individuals. It was under the cover of one of these structures that the Hottentot screened himself from the view of the Lion. Having remained silent and motionless for a great length of time, he ventured to peep over the side of the nest, hoping that the Lion had departed; when, to his astonishment and terror, his eyes met those of the animal, which, as the man afterwards expressed himself, "flashed fire at him." In short, the Lion laid himself down at the foot of the tree, and did not move from the place for four-and-twenty hours. At the end of this time, becoming parched with thirst, the beast went to a spring at some distance, in order to drink. The Hottentot now, with trepidation, ventured to descend; and ran off to his home, which was not more than a mile distant, as fast as his feet could carry him, and he arrived there in safety. The perseverance of the Lion was such, that, it appeared afterwards, he returned to the tree, and, finding the man had descended, hunted him by the scent to within three hundred paces of his dwelling.

If we did not know somewhat of the natural disposition of this stately animal, we should feel a great degree of terror in seeing the keepers of wild beasts play with him, pull out his tongue, and even chastise him, as they sometimes do. He seems to bear all with good-nature; and we very rarely have instances of his revenging these unprovoked and wanton insults. The Lion is frequently bred up with domestic animals, and is seen to play innocently and familiarly among them; and if it ever happen that his natural ferocity returns, it is seldom exerted against his benefactors. The following anecdotes afford very sufficient proofs of the gratitude and affection of this animal.

In the reign of king James the First, Mr. Henry Archer, a watchmaker in Morocco, had two whelps given him, which had been stolen not long before from a Lioness near Mount Atlas. They were a male and female; and, till the death of the latter, were kept together in the emperor's garden. He afterwards had the male constantly in his bedroom, till it grew as tall as a large mastiff-dog; and the animal was perfectly tame and gentle in its manners. Being about to return to England, he reluctantly gave it to a Marseilles merchant, who presented it to the French king, by whom it was sent as a present to the King of England, and was kept in the Tower. A person of the name of Bull, who had been a servant to Mr. Archer, went by chance with some friends to see the animals there. The beast recognized him in a moment; and, by his whining voice and motions, expressive of anxiety for him to come near, fully exhibited the strongest

symptoms of joy at meeting with a former friend. Bull equally rejoiced, ordered the keeper to open the gate, and he went in. The Lion fawned upon him like a dog, licking his feet, hands, and face; and skipping and tumbling about, to the astonishment of all the spectators. When the man left the place, the animal bellowed aloud, and shook his cage in an ecstasy of sorrow and rage; and for four days afterwards refused to take any nourishment.

LION AND KEEPER.

About the year 1650, when the plague raged at Naples, Sir George Davis, the English Consul there, retired to Florence. One day, from curiosity, he went to visit the Grand-duke's dens. At the further end of the place, in one of the dens, lay a Lion, which the keepers, during three whole years, had not been able to tame, though all the art and gentleness imaginable had been used. Sir George no sooner appeared at the gate of the den, than the Lion ran to him with all the indications of transport that he was capable of expressing. He reared himself up and licked his hand, which this gentleman put in through the iron grate. The keeper, affrighted, pulled him away by the arm, entreating him not to hazard his life, by venturing so near the fiercest creature of his kind that had ever entered those dens. Nothing, however, would satisfy Sir George; but in spite of all the keeper said to him, he would go into the den. The instant he entered, the Lion threw his paws upon his shoulders, licked his face, and ran about the place, fawning, and as full of joy as a dog would have been at the sight of his master.

An account of this interview between the Lion and the stranger was soon afterwards communicated to the Grand-duke. He sent for Sir George, and received from him the following account of what had seemed so strange: "The captain of a ship from Barbary gave me this Lion, when quite a whelp. I brought him up tame; but when I thought him too large to run about the house, I built a den for him in my court-yard: from that time he was never permitted to be loose, except when brought into the house to be exhibited to my friends. When he was five years old, he did some mischief, by pawing and playing with people in his frolicsome moods; having one day griped a man a little too hard, I ordered him to be shot, for fear of myself incurring the guilt of what might happen: on this, a friend, who happened to be then at dinner with me, begged him as a present. How he came here I know not." The Duke informed Sir George that the Lion had been given to him by the very person on whom Sir George had bestowed him.

An instance of recollection and attachment occured not many years since, in a Lion belonging to the Duchess of Hamilton. It is thus related by Mr. Hope: "One day I had the honor of dining with the Duchess of Hamilton. After dinner, the company attended her

grace to see a Lion fed that she had in the court. While we were admiring the fierceness of the animal, and teasing him with sticks to make him abandon his prey and fly at us, the porter came and informed the duchess that a serjeant with some recruits at the gate, begged to see the Lion. Her grace, with great condescension and good-nature, asked permission of the company to admit the travellers. They were admitted at the moment the Lion was growling over his prey. The serjeant, advancing to the cage, called, 'Nero, Nero, poor Nero, don't you know me?' The animal instantly turned his head to look at him; then rose up, left his prey, and came, wagging his tail, to the side of the cage. The man put his hand upon him, and patted him: telling us, at the same time, that it was three years since they had seen each other; and that the care of the Lion on his passage from Gibraltar had been committed to him, and he was happy to see the poor beast show so much gratitude for his attentions. The Lion, indeed, seemed perfectly pleased: he went to and fro, rubbing himself against the place where his benefactor stood, and licking the serjeant's hand as he held it out to him. The man wanted to go into the cage to him; but was prevented by the company, who were not altogether convinced that it would be safe for him to do so."

M. Felix, the keeper of the animals in Paris, some years ago brought two Lions, a male and female, to the national menagerie. About the beginning of the following June, he was taken ill, and could no longer attend the Lions; and another person was under the necessity of performing this duty. The male, sad and solitary, remained from that moment constantly seated at the end of his cage, and refused to take food from the stranger, whose presence was hateful to him, and whom he often menaced by bellowing. The company even of the female seemed now to displease him; and he paid no attention to her. The uneasiness of the animal afforded a belief that he was really ill; but no one dared to approach him. At length Felix recovered; and, with intention to surprise the Lion, he crawled softly to the cage, and showed only his face between the bars: the Lion, in a moment, made a bound, leaped against the bars, patted him with his paws, licked his hands and face, and trembled with pleasure. The female also ran to him; but the Lion drove her back, and seemed angry; and, fearful that she should snatch any favors from Felix, a quarrel was about to take place; but Felix entered the cage to pacify them. He caressed them by turns, and was afterwards frequently seen between them. He had so great a command over these animals, that whenever he wished them to separate and retire to their cages, he had only to give the order; when he had a desire that they should lie down, and show strangers their paws or throats, on the least sign they would throw themselves on their backs, hold up their paws one after another, open their throats, and, as a recompense, obtain the favor of licking his hand.

A Lion and Lioness which had been brought over together from Africa, about twenty years ago, were kept in the same den at Exeter Change in London. They were each about eighteen months old, and were attended by a Negro who had reared them from whelps, and had come over along with them. They permitted this man to enter their

den, and would fawn upon and play round him, like kittens. He frequently had a table in their den, with pipes and glasses; and, sitting down there, would quietly smoke his pipe If, on these occasions, their frolics were too boisterous, he had only to stamp his foot, and by his countenance to express his displeasure, and they would immediately cease, and quietly lie down by his side. But it was not at all times that even this man would venture himself with them. If they were irritated by the spectators, as, through mere wantonness, they sometimes were, he always refused to enter their den; and it is not recollected that he ever did this whilst they were feeding. When the man left Exeter 'Change, the female pined away, and soon afterwards died.

LION IN MENAGERIE.

We are assured, from numberless authorities, that the anger of this animal is noble, that his courage is magnanimous, and his disposition grateful. He has been often seen to despise contemptible enemies, and pardon their insults when it was in his power to have punished them. He has been known to spare the lives of such creatures as were thrown to be devoured by him, to live peaceably with him, to afford them part of his sustenance, and sometimes even to want food himself rather than deprive them of that life which his generosity had spared. Some years ago, a Dog was put into the cage of a Lion in the menagerie at the Tower, for his food. The stately animal, however, spared its life; and they lived together for a considerable time in the same den, in the most perfect harmony, and appeared to have a great affection for each other. The Dog had sometimes the impudence to growl at the Lion, and even to dispute with him the food which was thrown to them. The noble animal, however, was never known to chastise the impertinent conduct of his little companion; but usually suffered it to eat quietly till it was satisfied, before he began his own repast.

A Lioness, some years ago, in the Museum of the Jardin des Plantes

at Paris, permitted a Dog to live in her den, and was excessively fond of it. She seemed both pleased and gratified by its caresses, was attentive to all its wants, and was unhappy whenever it was removed from her sight.

A Lion, about three months old, was, in 1787, caught in one of the forests of Senegal; and Pelletau, the director of the African company in that colony, undertook to superintend the animal's education. The mildness of his physiognomy, and the unusual gentleness of his disposition, rendered this Lion a great favorite with all persons who saw him. Sensible of the good treatment that he received, he seemed, on all occasions, highly delighted wtih the caresses and attentions of his friends, and was, in most respects, as tractable as any domestic animal could be. Such was his love of society, that he was always delighted to be in a room where many persons were assembled: and what was very extraordinary, he lived in perfect harmony, and was at all times on the best terms, with the other animals, of every species, that were kept in his master's house. He slept in the same place with Sheep, Dogs, Cats, Monkeys, Geese, Ducks, &c. When he was about eight months old, two whelps were littered by a Terrier on his bed. This new family excited a most lively interest in the Lion; and if he had been the parent of the little animals, he could not have displayed to them an attachment more tender than that which was now remarked in him. One of the whelps died; his affection was redoubled towards the other; and this affection appeared to regulate all his movements. At the age of fourteen months, the Lion, with his little companion, was embarked for France. It was feared that the change of situation and habits would have had such influence as to render him in some degree ferocious. This, however, was not the case; for he could at all times be allowed, without danger, to range at liberty in the vessel. He was landed at Havre, and, attended by his faithful Dog, was, with only a cord attached to his collar, conducted thence to Versailles. On the death of the Dog, which took place some little time after their arrival at Versailles, he seemed to be very disconsolate and miserable; and it was thought necessary to supply the loss of his companion by putting into his den another animal of the same species. The second Dog, terrified at the sight of so tremendous a beast, immediately endeavored to conceal himself; and the Lion, surprised by the noise,

LION, LIONESS AND WHELPS.

struck the animal with one of his fore-paws, and killed it on the spot. He did not, however, attempt to devour it. A third Dog was put into his den, and lived with him for some years afterwards.

MR. CUMMING HUNTING THE LION IN AFRICA.

But although Lions have suffered Dogs to live in the same den with them, no instances have occurred, at least in England, of their allowing so great a privilege to any other animals. A Lion called Young Hector, not long ago in the Tower, had been some days ill, when (to try the experiment) a live Rabbit was put into his den. It was suffered to remain there uninjured one whole night and the next day; and some hopes began to be entertained that it would be permitted to share the apartment with the noble animal in quiet. But on the morning following the second night, it was found dead. The Lion had not attempted to devour it, for the skin was not lacerated; but when this was stripped off, there were on each side of the body the evident marks of his teeth. In another instance, a Cat had accidentally crept among the straw of his bed-place; but the moment he discovered her, he sprang upon and destroyed her.

In the Museum, at Paris, one of the Lionesses littered three times. At the first litter she produced nine, at the second three, and at the third two young-ones. The parents, which were about equal in age, and probably were of the same litter, had been caught together, when somewhat more than a year old, in a trap, made in a wood, in th North of Africa. They lived happily together, were extremely gentle, and exhibited great affection toward each other. None of the young-ones had at first either a mane, or tuft at the end of their tail: and we are assured that these do not begin to appear till the

animals are three years or three years and a half old. Their coat was somewhat woolly, and of a confused color between grey and red. They had several little brown transverse strokes on the upper part of their back. As they increased in size, these by degrees disappeared; and with a more regular proportion of limbs, the hair assumed nearly the color of that of the old animals. A Lion and Lioness in the Menagerie at Exeter 'Change, had there three litters, one in May, 1818, another in May following, and the third in January, 1820. The most celebrated Lion hunters of modern time are M. Gerard and Mr. Cummings, one in the North and the other in

MR. CUMMING ATTACKING FOUR LIONS.

the South part of Africa. Mr. Cumming on one occasion encountered four Lions and attacked them without hesitation.

The Lions in the French Museum begin to roar at day-break. They continue this noise for six or seven minutes; and recommence it after feeding, for about the same length of time. At other times they are seldom heard; except to announce some change of weather, or when their keeper has been long absent. In a state of nature, the Lion seldom leaves his den except during the night; but in the Museum the animals, being shaded from the too glaring light of the sun, are, on the contrary, always most active in the day.

The Lions in the Tower of London generally begin to roar in the evening, just before the night closes. They usually do this at the approach of rainy weather; and much more on Sunday than any other days, from their being then left almost entirely by themselves.

In the den adjoining to that in which the before-mentioned Lioness of the French Museum was placed, there was another female, which had been caught in the interior of Africa, at a much greater distance

from the habitations of men than places from which any others in the Museum had been brought. According to the account of Felix Cassel, the principal keeper, who travelled into Africa to collect animals, she came from the borders of the Great Desert. She was ferocious in the extreme, and all the care and attention of the keepers have not hitherto in the least degree softened her natural disposition. This circumstance seems to confirm the opinion of Buffon and some other naturalists; who assert that Lions possess greater strength and ferocity, according as they are removed from the haunts of man; and that the most formidable character is to be expected in those that frequent only the burning and sandy deserts of the interior of Asia and Africa.

M. GERARD SHOOTING A LION.

Mr. Brown tells us, that while he was resident at Dar Fur, in Africa, he purchased two Lions, one of which was only four months old. By degrees, he rendered the latter animal so tame that it acquired most of the habits of a Dog. It satiated itself twice a-week with the offal of the butchers, and then commonly slept for several hours successively. When food was given to these animals, they were not only furious to each other, but to any one who approached them: excepting, however, when they were fed, Mr. Brown never saw them disagree, nor exhibit any signs of ferocity towards man-

kind. The Sultan of Dah Fur had also two tame Lions, which their attendant always brought into the market to be fed.

The roaring of the Lion when in quest of prey, resembles the sound of distant thunder; and being re-echoed by the rocks and mountains, appals the whole race of animals, and puts them to a sudden flight; but he frequently varies his voice into a hideous scream or yell. The tradition that these animals are terrified at the crowing of a Cock is not founded in fact.

The Lion is commonly said to devour as much at once as will serve him for two or three days; and, in confinement, he is usually allowed about four pounds weight of raw flesh for his daily subsistence. His teeth are so powerful, that he can break the bones of animals with perfect ease, and he often swallows them along with the flesh. His tongue is furnished with reversed prickles, so large and strong as to be capable of lacerating the skin. When he is enraged, or in want of food, he erects and shakes his mane, and beats his tail with considerable violence against his back and sides. In this state, the inhabitants of the Cape assert, that it is certain death to any person who happens unfortunately to approach him; but when his mane and tail are at rest, and the animal is in a placid humor, travellers may in general pass near him with safety.

LION ENRAGED.

The Lioness is smaller than the Lion, and destitute of a mane. She brings forth her young-ones in the most sequestered places, and produces four or five at a litter, which, at their first appearance, are about the size of a small Pug-Dog.

Kolben, who was some time at the Cape of Good Hope, and who seems, unaccountably, to have been more partial to the flesh of rapacious animals than that of most others, says that the Lion is frequently eaten at the Cape, and that the flavor is excellent, being much like that of venison.

THE TIGER.

The Tiger is about the same size as the Lion. His head and body are smooth, of a brownish or tawny yellow color, with long transverse stripes.

He is a native of various parts both of Africa and Asia, but is principally found in India and the Indian islands.

At the same time that he is the most beautiful, the Tiger is cer-

tainly one of the most ferocious of quadrupeds. Indeed, so sanguinary is his disposition, that there is no animal, however strong and powerful, that he will not venture to attack. Such furious combats have taken place between the Lion and Tiger, that in some instances both animals have been known to perish, rather than give up the contest.

THE TIGER.

He commits the most lamentable ravages among flocks and herds, in the countries where he resides; and neither the sight nor the opposition of man has any power to make him desist. When undisturbed in seizing an animal, he plunges his head into its body, and drinks large draughts of blood, the sources of which are generally exhausted before his thirst is appeased.

The muscular strength of the Tiger is excessively great. We are assured, that a peasant in the East Indies had a Buffalo fallen into a quagmire; and that while he went to call for assistance, an immense Tiger came and drew out the animal, on which the united efforts of several men had been of no avail. When the people returned, the first object they beheld was the Tiger, with the Buffalo thrown over his shoulder: he was carrying it away, with the feet upwards, towards his den. As soon, however, as he saw the men, he let fall his prey, and instantly fled to the woods; but he had previously killed the Buffalo, and sucked its blood.

The method of the Tiger's seizing his prey is, by concealing himself from view, and springing upon it with a horrible roar. His cry, in the act of springing on his victim, is said to be hideous beyond expression; and we are told that, like the Lion, if he misses his object, he walks away without repeating the attempt. When he can securely attack mankind, he is said to prefer them to any other prey; but he seldom makes an open attack upon any creature that is capable of resistance.

In the beginning of the last century, a company, seated under the shade of some trees, near the banks of a river in Bengal, were alarmed by the unexpected sight of a Tiger, preparing for its fatal spring; when a lady, with almost unexampled presence of mind, unfurled a large umbrella in the animal's face. The extraordinary and sudden appearance of this so confounded him, that he instantly retired, and thus gave the party an opportunity of escape.

The fatal accident which some years ago occurred in the East Indies, must still be fresh in the memories of all who have read the dreadful

TIGER ATTACKING A BUFFALO.

description that was given by an eye-witness of the scene. We went (says the narrator) on shore on Sangar Island, to shoot deer; of which we saw innumerable tracks, as well as of Tigers. We continued our diversion till nearly three o'clock; when, sitting down by the side of a jungle to refresh ourselves, a roar like thunder was heard, and an immense Tiger seized on one of the party, Mr. Monro, the son of Sir Hector Monro, Bart., and rushed again into the jungle, dragging him through the thickest bushes and trees, every thing giving way to its monstrous strength; a Tigress accompanied his progress. The united agonies of horror, regret, and fear, rushed at once upon us. I fired at the Tiger; he seemed agitated. My companion fired also; and in a few moments after this, our unfortunate friend came up to us, bathed in blood. Every medical assistance was vain; and he expired in the space of twenty-four hours, having received such deep wounds from the teeth and claws of the animal, as rendered his recovery hopeless. A large fire, consisting of ten or twelve whole trees, was blazing near us at the time this accident took place, and ten or more of the natives were with us. The human mind can scarcely form any idea of this scene of horror. We had but just pushed our boat from the shore, when the

Tigress made her appearance, almost raging mad, and remained on the sand all the while we continued in sight.

Near the borders of Tartary, Tigers are very frequent: and in so populous an empire as China, it would seem impossible for them to

TIGER IN A JUNGLE.

have remained till the present day unextirpated. In the northern roads, hundreds of travellers are sometimes seen with lanterns carried before them, to secure them from the attack of these ravenous animals. In some parts of India, Tigers are particularly fatal to wood-cutters and laborers about the forests; and they have been known to swim to boats at anchor at a little distance from the shore, and snatch the men from on board. In Java they are so much dreaded, that when any person of consequence goes out into the country, he has with him men who blow incessantly a kind of small French horns, the shrill sound of which frightens these creatures away. The hunting of Tigers is a favorite amusement with some of the Eastern Princes; who go in search of them, attended by considerable bodies of men, well-mounted, and armed with lances. As soon as the animals are roused, they are instantly attacked on all sides, with pikes, arrows, and sabres, and are presently destroyed. This diversion is, however, always attended with danger; for if the Tiger feels himself wounded, he seldom retreats without sacrificing one of the party to his vengeance. There are men who, covered with a coat of mail, or even armed only with a shield, a poniard, and a short cimiter, will dare to attack these blood-thirsty animals singly, and fight with them, life for life; for, in combats of this nature, there is no other alternative than to vanquish or to fall.

The roar of the Tiger, which is chiefly heard during the night, is said to be exceedingly dreadful. In begins by intonations and inflections, deep, melancholy, and slow: presently it becomes more acute: then, the animal suddenly exerting himself, utters a violent cry, interrupted by long, tremulous sounds, which make a distracting impression upon the mind.

The Tiger, if taken young, may, for a short time at least, till his ferocity comes with his age, be in some measure domesticated, and rendered mild and playful. A beautiful young Tiger, brought in the Pitt East Indiaman from China, in the year 1790, was so far domesticated as to admit of every kind of familiarity from the people on board the ship. It seemed to be quite harmless, and was as playful as a kitten. It frequently slept with the sailors in their hammocks; and would suffer two or three of them to repose their heads on its back, as upon a pillow, while it lay stretched out upon the deck. In return for this indulgence, it would, however, now and then steal their meat. Having one day stolen a piece of beef from the carpenter, he followed the animal, took the meat out of its mouth and beat it severely for the theft; which punishment it suffered with all the patience of a Dog. It would frequently run out on the bowsprit; climb about the ship like a cat; and perform many other tricks, with an agility that was truly astonishing. There was a Dog on board, with which it would often play in the most diverting manner imaginable. This animal was taken on board the ship when it was only a month or six weeks old, and arrived in England before it had quite completed its first year. On its arrival it was presented to the king, and was afterwards deposited in the Tower of London. It even there continued to be perfectly good-natured, and was in no instance known to be guilty of any savage or mischievous tricks.

YOUNG TIGER.

In the year 1801, one day after this Tiger had been fed, his keeper put into the den to him a small, rough, black Terrier puppy, a female. The beast suffered it to remain uninjured, and soon afterwards became so much attached to it, as to be restless and unhappy whenever the animal was taken away to be fed. On its return, the Tiger invariably expressed the greatest symptoms of delight, always welcoming its arrival by gently licking over every part of its body. In one or two instances, the Terrier was left in the den, by mistake, during the time, the Tiger had his food. The Dog sometimes ventured to eat with him, but the Tiger generally appeared dissatisfied with this liberty. After a residence with the Tiger of several months, the Terrier was removed to make way for a little female Dutch Mastiff. It was, however, thought advisable, before the Terrier was taken away, to shut up the Mastiff for three or four days among the straw of the Tiger's bed, to take off, if possible, any smell that might be offensive to the animal. The exchange was made soon after the animals had been fed; the Tiger seemed perfectly satisfied with his new companion, and imme-

diately began to lick it, as he had before done the Terrier. The Dog seemed at first in considerable alarm with so formidable an inmate, but in the course of the day he became perfectly reconciled to his situation. This diminutive creature the Tiger would suffer to play with him, with the greatest good nature. I have myself seen it bark at him, and bite him by the foot and mouth, without his expressing the least displeasure. When the Dog, in its frolic, seized his foot, he merely lifted it up out of its mouth, and seemed otherwise heedless of its attacks.

Strange Dogs were several times put into the Tiger's den after his feeding, and he in no instance attempted to injure them. Mr. Cross, the keeper of Exeter 'Change, and who formerly had the care of the animals in the Tower, informed me that he could himself have ventured in safety into the den. The ship-carpenter, who came over with the Tiger, came to the Tower to see him. The animal, though they had been separated more than two years, instantly recognized a former acquaintance, rubbed himself backwards and forwards against the grating of his den, and appeared highly delighted. Notwithstanding the urgent request that he would not expose himself to so much danger, the man begged to be let into the den, and with so much entreaty, that he was at last suffered to enter. The emotions of the animal seemed roused in the most grateful manner. He rubbed himself against him, licked his hands, fawned upon him like a Cat, and in no respect attempted to injure him. The man remained there two or three hours; and he at last began to fancy there would be some difficulty in getting out alone. Such was the affection of the animal towards his former friend, and so close did he keep to his person, as to render his escape by no means so easy as he had expected. With some care, however, he got the Tiger beyond the partition of the two dens, and the keeper, watching his opportunity, closed the slide, and separated them.

At Exeter 'Change, Mr. Cross succeeded in having a young Tiger and a Lioness kept in the same cage. They were each so tame, that, although nearly eighteen months old, the keeper could without danger go into the cage, and play with them as he would have done with two Dogs.

The Tigress, like the Lioness, produces four or five young-ones at a litter. In a wild state she is at all times furious; but her rage rises to the utmost extremity when robbed of her offspring. She then braves every danger, and pursues her plunderers with a degree of ferocity which is indescribable. In India the Tiger is hunted by the native princes mounted on Elephants and attended by a numerous train of hunters.

The skin of the Tiger is in great esteem in all the eastern countries; and particularly in China, where the mandarins cover their seats of justice with it. It is also applied to many ornamental and usful purposes. The Indian physicians attribute medical virtues to various parts of the Tiger's body.

THE PANTHER.

The length of the Panther is usually more than six feet, exclusive of the tail, which is about three feet long. The color of the upper parts of the body is bright tawny-yellow, with numerous black, roundish, or somewhat annular marks, several of which have in the centre of each a black spot. The under parts of the body are white.

THE PANTHER.

In nearly all its habits of life the Panther resembles the Tiger. Like that ferocious beast, he lurks in ambush amongst bushes or verdure, on the borders of the forests, and springs with a sudden and tremendous leap on such animals as pass by. So prompt, so rapid, and so well-timed are his movements, that few escape. In vain may the wretched victim seek for refuge even in the trees: the Panther, notwithstanding the size and the weight of his body, still pursues, with an agility which seems almost incredible, and there dispatches his victim.

The Panther has none of the noble qualities of the Lion. His thirst for blood is insatiable; and his ferocity is such, that even when subjugated and in the power of man, he seems rather to be subdued than tamed.

One of these animals which was seen by M. de Buffon, had, he says, a ferocious countenance, and a restless eye: his motions were precipitate, and his cry similar to that of an enraged Dog, but more strong and harsh. This individual, like nearly all those that are brought into Enrope, was a native of Barbary, and was taken in the forests adjacent to Mount Atlas.

The mode adopted to destroy the Panther is usually this. A bait, consisting of a piece of flesh, is suspended on a tree, in the immediate neighborhood of which the hunter has previously erected a hut for his own concealment. The smell of the flesh attracts the animal to the spot, and, whilst he is in the act of seizing it, the hunter shoots him, with an aim so correct as almost always to wound him mortally. On the following day, and not before, he ventures to issue from his hiding-place, and, by means of a Dog trained for the purpose, tracks the animal to his retreat. If he be still alive, the Dog inevitably falls a sacrifice to his rage, and his cries give warning to the hunter to retreat from similar danger; but if he be dead, which most commonly is the case, the man seizes upon his prize unmolested.

An instance is recorded by Poiret, of a Moor who was pursued by a wounded Panther. He says, that the man escaped only by the strata-

gem of throwing a part of his clothes upon a bush as he passed by it. These the animals sprang upon and tore into a thousand fragments.

THE OUNCE.

The Ounce is much smaller than the Panther: its body seldom exceeds the length of about three feet and a half. The hair is long and somewhat shaggy. Its color is a tawny white, with numerous irregular black marks. The length of the tail is about three feet.

THE OUNCE.

The inhabitants of several provinces of Persia, tame the Ounce, for the purpose of employing it in the chase. In the hot climates of Asia Dogs are rarely to be found, unless they have been transported thither from Europe; and even in this case they soon lose not only their voice, but their faculty of hunting.

The scent of the Ounce is inferior to that of the Dog, and he consequently hunts almost wholly by the eye; but so perfect are all his other faculties, that he is infinitely more expeditious in the killing of game than any number of Dogs could possibly be.

Some of these animals are so small, that the Persians are able to carry them on horseback, upon small leathern pads made for the purpose; and they are so gentle towards those who are accustomed to attend and feed them, that they will without difficulty suffer themselves to be handled and caressed. The horseman no sooner perceives a Gazelle or an Antelope within proper distance, than he makes the Ounce descend; and, if the animal be at all expert in his business, he generally is enabled to seize his prey by the neck in five or six leaps.

THE HUNTING LEOPARD.

The Hunting Leopard is about the height of a large Greyhound; of a light tawny brown color, marked with numerous circular black spots. The legs and tail are long. Its form is more lengthened than that of the Tiger, and the chest is narrower.

This is an Indian animal, is likewise frequently tamed, and is used in the chase of Antelopes. It is carried in a kind of small wagon, chained and hooded, lest, on approaching the herd, it should be too precipitate, or should not make choice of a proper animal. When first unchained, it does not immediately spring towards its prey; but winds,

LEOPARD AT BAY IN A TREE. Page 195.

with the utmost caution, along the ground, stopping at intervals, and carefully concealing itself until a favorable opportunity offers: it then darts on the herd with astonishing swiftness, and overtakes them by the rapidity of its bounds. If, however, in its first attempt, which consists of five or six amazing leaps, it does not succeed, it loses its breath; and, finding itself unequal in speed, stands still for a while to recover; then giving up the point for that time, quietly returns to its keeper.

THE HUNTING LEOPARD.

THE LEOPARD.

This animal is about four feet in length; of a yellowish color, and marked with numerous annular spots. The tail is about two feet and a half long. It is an inhabitant of Senegal, Guinea, and most parts of Africa.

The general appearance of the Leopard is ferocious and cruel. His eye is restless, his countenance forbidding, and all his motions are short and precipitate. In his general habits he resembles the Panther; he lies in ambush for prey, and thence springs upon and devours almost every species of animal which he has the strength to overcome. Occasionally these beasts have been known to descend in great numbers from their lurking-places, and commit dreadful slaughter among the numerous herds of cattle which graze in the plains.

THE LEOPARD.

In the year 1708, if we may believe the account recorded by Kolben, a male and female Leopard, with three young-ones, entered a sheep-fold at the Cape. They killed nearly a hundred Sheep, and regaled themselves with the blood. When the old ones were satiated, they

tore a carcass into three pieces, and gave one of these to each of their offspring. They then took each a whole Sheep; and, thus laden, began to move off. Having, however, been observed, they were way-laid on their return, and the female and three young-ones killed; but the male effected his escape. The same writer also informs us, that the Leopard will not eat carrion, nor deign to touch what has been killed by any other beast.

LEOPARD LYING IN AMBUSH.

The Negroes take these animals by means of pitfalls covered slightly over with hurdles, on which a piece of flesh is placed as a bait. They are not, however, employed in the chase, like the Ounce or the Hunting Leopard.

The late Sir Ashton Lever had a Leopard, which he kept in a cage at Leicester House. It had become so tame, as always to seem highly pleased by caresses and attention, purring and rubbing its sides against the cage like a Cat. Sir Ashton gave it to the royal menagerie in the Tower; where a person, before acquainted with it, saw it after an interval of more than a year, notwithstanding which it appeared instantly to recognize him, and began as usual to renew its caresses.

The flesh of the Leopard, says Kolben, is white and well-tasted, and eats much better than the finest veal! It is both nourishing and delicious; that of the young is as tender as a chicken! The skins are brought into Europe, where they are in great estimation: some of the most beautiful of them sell for more than ten guineas each.

THE PUMA, OR SOUTH AMERICAN LION.

The length of the body of the Puma is about five feet, and its height two feet and a half; and its tail is about two feet long. The head is round, and the ears are short. Its color is a pale, brownish red, somewhat darker in some parts than in others. The under parts are white.

THE PUMA.

By the Spaniards of Peru and Chili this animal has been denominated the Lion of South America; and in its color, its voice, and general shape, except that it is destitute of mane it is not altogether unlike that animal.

The Puma inhabits the thickest forests, and the most inaccessible ountains, from which it makes incursions into the plains to attack

THE PUMA WITH ITS PREY.

domestic animals, particularly Horses, whose flesh it prefers to that of any other. In the mode of seizing its prey it resembles the Cat: it approaches by crawling along upon its belly; it glides softly through the shrubs and bushes, conceals itself in ditches, or, if it show itself it assumes a mild and fawning appearance. But all this time it is only watching a favorable opportunity to seize the animal which it has marked for its victim: at one leap it fastens itself upon the back of its prey, and, in a few minutes, tears it to pieces. It then sucks the blood, devours the flesh of the breast, and carries the remainder of the carcass into the nearest wood, where it conceals it with the leaves and boughs of trees, in order to eat it at leisure.

It is a common practice for the husbandmen of Chili to fasten two of their horses together in the fields; and whenever the Puma finds them in this situation, Molina informs us, that it kills one and drags it away, and compels the other to follow, by striking it from time to time with its paw. The favorite haunts of the Puma are the streams to which animals usually repair to drink: here it conceals itself upon a tree, and scarcely ever fails of seizing one of them. The horses, however, have an instinctive dread of these places, and even when pressed by thirst, they approach them with great caution, carefully examining on every side to discover if there be danger. Cows defend themselves against these animals. As soon as one of them appears, they range themselves in a circle round their calves, and with their horns turned toward the assailant, await his attack, and not unfrequently destroy him.

All such animals that have not young-ones, attempt, at the approach of the Puma, to save themselves by flight. The ass alone, from want of speed, is compelled to defend himself with his heels, and frequently proves successful. But should the Puma leap upon his back, the ass

immediately throws himself upon the ground, or runs with all his force against the trunks of trees; and thus endeavors to free himself from his assailant.

The Puma is naturally a coward, and the appearance of even a woman or a child is sufficient to make him fly and abandon his prey. He is hunted with dogs trained for the purpose, and when hard pressed, either leaps upon a tree, seeks an asylum on a rock, or placing himself against the trunk of some large tree, defends himself in a furious manner.

In captivity the Puma loses much of his savage nature, and may be rendered almost as gentle as a domestic animal. A Puma mentioned in the supplementary volumes of M. de Buffon, would suffer himself to be patted with the hand; and children were frequently known to mount astride upon his back, without his exhibiting the slightest symptoms of resentment. Mr. Keen the actor, when in London, had generally in his house a Puma, belonging to Mr. Cross, then proprietor of the menagerie of Exeter 'Change. The animal was sometimes introduced into the room when he had company; and by many persons was considered to be a Lion.

THE JAGUAR, OR SOUTH AMERICAN TIGER.

The Jaguar is somewhat larger than the Wolf, of a brownish yellow color, variegated on the upper parts of the body with streaks, and open oblong spots or markings of black. The thighs and legs also have black spots, but without central spaces; the breast and belly are whitish. The tail is about two feet and a half in length.

THE JAGUAR.

It is a native of Brazil, and several other parts of South America.

The Jaguar has most of the habits, and nearly all the propensities of the Puma. He is so strong and voracious, that he is able to seize and carry off a Sheep or Deer with the utmost facility; and yet he is so cowardly, that he may sometimes be put to flight by a shout. Cows and Horses are not always secure from his attack. These animals, as he is unable to drag them to his retreat in the forests, he tears to pieces on the spot, and satiates himself with their blood. The

strongest of wild Boars he is able to overthrow by a single stroke of

JAGUAR WAITING FOR DEER.

his paw. Few of the American animals are a match for the Jaguar, except the enormous Serpents, which frequent the savannahs; and these, it is currently stated, by entwining themselves round his body, are able to strangle and destroy him.

The Jaguar is not an indolent animal, as some writers have asserted. He constantly attacks Dogs; often commits great devastation among flocks, and, in the deserts, is formidable even to men. In a journey made by M. Sonnini, through the forests of Guiana, he and

HUNTING THE JAGUAR.

his party were tormented by one of these beasts, for three successive nights; and yet the animal avoided all the attempts that were made to destroy him. But finding that large fires were constantly kept up, he at last left them, venting a dismal howl at his departure.

HUNTER SURPRISED BY JAGUAR.

The power which these animals have of ascending trees is very remarkable. M. Sonnini states, that he has seen marks of the claws of a Jaguar, on the smooth bark of a tree, which was between forty and fifty feet in height, and which had not a single branch except at the top. He says that it was easy to remark the efforts the animal had made: although he had pierced through the bark, deeply into the wood, he had evidently slipped more than once; but he had surmounted every difficulty, and, attracted no doubt by some prey which was peculiarly alluring, had attained the summit.

THE CAPE CAT

The Cape Cat is of a bright tawny color, and marked on the back with oblong black streaks, and in the other parts of the body with blotches of the same. A skin, measured by Mr. Pennant, was found to measure three feet, from the nose to the tail.

THE CAPE CAT.

These elegant animals, which, in size, are considerably larger than the domestic Cat, are found wild among the mountains near the Cape of Good Hope. In the places adjacent to their retreat, they are very destructive to Rabbits, young Antelopes, Lambs, and even to all the feathered race. In disposition, however, they are by no means so fierce as the generality of their tribe; and, when caught young, may be easily rendered tame and domestic.

In the year 1795, when Dr. Forster was at the Cape, he saw one of these animals, which was about nine months old. He says that its manners and economy seemed perfectly analogous to those of our domestic Cats. It ate fresh raw meat, and appeared very much to attach itself to its feeders and benefactors. After Dr. Forster had fed it a few times, it followed him like a tame Cat. It was fond of being stroked and caressed; rubbed its head and back against the person's clothes who fed it, and seemed desirous of being noticed; and it purred in the same manner as domestic Cats do when they are pleased.

THE WILD CAT.

This animal has a larger head and stronger limbs than the domestic Cat. Its color is a pale yellowish-gray, with dusky stripes; those on

THE WILD CAT.

the back running length-wise, and those on the sides transversely and in a curved direction. The tail is shorter than in the domestic kinds, and is barred with dusky rings.

The manners of the Wild Cat are nearly allied to those of the Lynx, and to those of several others of the larger species of its tribe. It may, with propriety, be denominated the British Tiger, since it is by far the fiercest and most destructive beast that is found in England.

These animals are sometimes caught in traps, and sometimes killed with guns. It is, however, dangerous to merely wound them, for in this case they have sometimes been known to attack the assailant; and their strength is so great as to render them no despicable enemy. At Barnboro', a village between Doncaster and Barnsley, in Yorkshire, there is a tradition extant of a serious conflict that once took place between a Man and a Wild Cat. The inhabitants say, that the fight commenced in an adjacent wood, and that it was continued thence into the porch of the church. I do not recollect in what manner it is reported to have begun; but they state that it ended fatally to both combatants. A rude painting in the church commemorates the event; and the accidentally natural red tinge of some of the stones, is considered as stains of blood still remaining.

Wild Cats breed in hollow trees, and usually produce four young-ones at a litter. They are yet found in several of the mountainous districts of Scotland and Ireland; and occasionally amongst the woods that border the lakes of the North of England. In the neighborhood of the places which they inhabit, they often make destructive havoc among Lambs and poultry

THE DOMESTIC CAT.

The manners and disposition of the Cat seems to be entirely changed by education; and, although it does not exhibit towards mankind the affection of the Dog, yet it is by no means destitute either of gentleness or gratitude. These animals are not, like the Dog, attached to our persons: their chief attachment seems to be to the houses in which they have been brought up. Instances are not uncommon of Cats having returned, of their own accord, to the place from which they have been carried; though at the distance of many miles, and even across rivers, where they could not possibly have had any knowledge either of the road, or of the direction that would lead them to it. This local attachment may perhaps arise from their having been acquainted, in their former habitations, with all the retreats of the Mice, and the passages and outlets of the house; and

THE DOMESTIC CAT.

from the disadvantages which they must experience in these particulars by changing their residence.

Few animals exhibit more maternal tenderness, or show a greater love for their offspring, than the Cat. The assiduity with which she attends them, and the pleasure which she seems to take in all their playful tricks, afford a grateful entertainment to every observer of nature. She has also been known not only to nurse with tenderness the offspring of different individuals of her own species, but even those of other kinds of animals.

THE DOMESTIC CAT.

A friend of the Rev. Mr. White of Selborne, had a little helpless *Leveret* brought to him, which the servants fed with milk from a spoon; and about the same time his Cat kittened, and her young-ones were destroyed. The Hare was soon lost; and was supposed to have been killed by some Dog or Cat. About a fortnight afterwards, as its owner was sitting in his garden, in the dusk of the evening, he observed his Cat, with tail erect, trotting towards him, and calling with little short inward notes of complacency, (such as these animals use towards their Kittens,) to something gambolling after her, which proved to be the Leveret, that the Cat had nourished with her milk, and continued to support with great affection. Thus was a gramenivorous animal nurtured by a carnivorous and predacious one! This strange affection in the Cat was probably occasioned by those tender maternal feelings, which the loss of her Kittens

CAT AND KITTEN.

had awakened; and by the complacency and ease she had derived from having her teats drawn, when too much distended with milk. From habit, she became as much delighted with this foundling, as if it had been her real offspring.

A boy (Mr. White says) brought to him three young Squirrels which had been taken from their nest. These little creatures he put under a Cat that had recently lost her Kittens; and he found that she nursed and suckled them with the same assiduity and affection as if they had been her own progeny. So many persons, however, went to see the little Squirrels suckled by a Cat, that the foster-mother became jealous of her charge, and in pain for their safety; and therefore hid them over the ceiling, where one of them died.

Some years ago a sympathy of this nature took place, in the house of Mr. James Greenfield, of Maryland, between a *Cat and a Rat.* The Cat had Kittens, to which she frequently carried Mice, and other small animals for food; and among the rest she is supposed to have carried them a young Rat. The Kittens, probably not being hungry, played with it; and when the Cat gave suck to them, the Rat likewise sucked her. This having been observed by some of the servants, Mr. Greenfield was informed of it. He had the Kittens and Rat brought down stairs and put on the floor; and in carrying them off, the Cat was remarked to convey away the young Rat as tenderly as she did any of the Kittens. This experiment was repeated as often as any company came to the house, till a great number of persons had become eye-witnesses of the extraordinary affection.

Cats, by means of their whiskers, seem to possess something like an additional sense; these have, perhaps, some analogy to the antennæ of moths and butterflies. They consist not only of long hairs on the upper lip, but also of four or five long hairs standing up from each eye-brow, and two or three on each cheek; all which, when the animal erects them, make, with their extremities, so many points in the periphery of a circle, equal, at least, in extent, to the circumference of their own bodies. With this instrument, it is supposed that, by a little experience, they can at once discover whether any aperture among hedges or shrubs (in which animals of this genus live in their wild state) is large enough to admit their bodies; to them a matter of the greatest consequence, whether pursuing or pursued. They have likewise the power of erecting and bringing forward the whiskers on their lips; which probably is for the purpose of feeling whether a dark hole be permeable or not.

It is generally supposed that Cats are able to see in the dark; but, although this is not absolutely the case, it is certain than they can see with much less light than most other animals; owing to the peculiar structure of their eyes, the pupils of which are capable of being contracted or dilated in proportion to the degree of light by which they are affected. In the day-time, the pupil of the Cat's eye is perpetually contracted, and sometimes into a mere line; for it is with difficulty that this animal can see by a strong light: but in the twilight the pupil resumes its natural roundness, and the animal enjoys perfect vision.

In order to preserve their fur clean, Cats wash their faces, and

generally quite behind their ears, every time they eat. As they can not lick those places with their tongues, they first wet the inside of their leg with the saliva, and then repeatedly rub them over with it. This Dr. Darwin, whimsically enough, esteems an act of reasoning; "because," he says, "a means is used to produce an effect; which means seem to be acquired by imitation, like the greater part of human arts."

CAT AND KITTENS.

The fur of the Cat, being generally clean and dry, readily yields electric sparks when rubbed; and, if a clean and perfectly dry Domestic Cat be placed, in frosty weather, on a stool with glass feet, or be insulated by any other means, and rubbed for a little time in contact with the wire of a coated vial, the vial will become charged.

No experiment can be more beautiful than that of sitting a Kitten, for the first time, before a looking-glass. The animal appears surprised and pleased with the resemblance, and makes several attempts to touch its new acquaintance; and, at length, finding its efforts fruitless, it looks behind the glass, and appears astonished at the absence of the figure. It again views itself, and tries to touch the image with its foot, suddenly looking at intervals behind the glass. It then becomes more accurate in its observations; and begins, as it were, to make experiments, by stretching out its paw in different directions; and when it finds that these motions are answered in every respect by the figure in the glass, it seems, at length, to be convinced of the real nature of the image.

The following curious fact in the natural history of the Cat, is related by Dr. Anderson, in his Recreations in Agriculture: a Cat belonging to Dr. Coventry, the ingenious Professor of Agriculture in Edinburg, had no blemish at its birth, but lost its tail by accident when its was young. This Cat had many litters of Kittens; and in every litter there was one or more that wanted the tail, either wholly or in part.

"A Cat," says Browne, in his Natural History of Jamaica, "is a very dainty dish among the Negroes."

THE ANGORA CAT.

When M. Sonnini was in Egypt, he had an Angora Cat in his possession for a long time. It was entirely covered with long silky hairs; its tail formed a magnificent plume; which the animal elevated, at pleasure, over its body. Not one spot, nor a single dark shade, tarnished the dazzling whiteness of it coat. Its nose and lips were of a delicate rose-color. Two large eyes sparkled in its round head; one of which was a light yellow, and the other a fine blue color.

This beautiful animal had even more loveliness of manners, than grace in its attitude and movements. With the physiognomy of goodness, she possessed a gentleness truly interesting. How ill soever any one used her, she never attempted to advance her claws from their sheaths. Sensible to kindness, she licked the hand which caressed, and even that which tormented her. On a journey, she reposed tranquilly on the knees of any of the company, for there was no occasion to confine her; and if M. Sonnini, or any other person whom she knew, was present, no noise whatever gave her the least disturbance.

In M. Sonnini's solitary movements, she chiefly kept by his side; she interrupted him frequently in the midst of his labors or meditations, by little caresses extremely affecting; and generally followed him in his walks. During his absence, she sought and called for him incessantly, with the utmost inquietude; and, if it was long before he reappeared, she would quit his apartment, and attach herself to the person of the house where he lived; for whom, next to himself, she entertained the greatest affection. She recognized his voice at a distance; and seemed on each fresh meeting with him to feel increased satisfaction. Her gait was frank, and her look as gentle as her character.

"This animal," says M. Sonnini, "was my principal amusement for several years. How was the expression of her attachment depicted upon her countenance! How many times have her tender caresses made me forget my troubles, and consoled me in my misfortunes! My beautiful and interesting companion, however, at length perished. After several days of suffering, during which I never forsook her, her eyes, constantly fixed on me, were at length extinguished; and her loss rent my heart with sorrow."

THE LYNX.

The Lynx is four feet in length, exclusive of the tail, which measures about six inches. The ears are erect, and have a long pencil of black hair at the tip. The fur is long and thick. The upper parts of the body are of a pale gray color, with a reddish-tinge, and obscurely marked with small dusky spots. The under parts are white.

This animal is proverbial for his piercing sight. The ancients even went so far as to believe that he could see through stone walls. For us, however, it is sufficient to know that, probably, there is no beast existing which is able to discover its prey at so great a distance as the Lynx.

Most of the northern parts of Europe, of Asia and America, are subject to the depredations of these voracious and destructive animals. They prefer cold to temperate climates; are seldom found in the open plains; but, like the Tiger, Leopard, and Panther, conceal themselves in the thick shelter of woods and forests. Their voice is not easily distinguished from that of the Wolf.

The Lynx is able to pursue his prey even into the branches of the highest trees. Neither the wild Cat, the Martin, the Ermine, nor

even the Squirrel, can escape him. He also unrelentingly seizes upon and destroys the Stag, the Roe-Buck, and the Hare. When Sheep

THE LYNX.

happen to be folded in the neighborhood of his retreat, he will scratch his way through the earth, under the doors of the fold; and, if not checked by the presence of the shepherd, will commit the most horrible devastations.

Such is the native ferocity of the Lynx, that it is considered impossible to tame and subdue him. In a state of captivity, on the slightest irritation or insult, he expresses his maglignity by a kind of snarling scream.

LYNX ATTACKING MOOSE DEER.

The fur of the Lynx is thick and soft; and, when of a pale or whitish color, with the spots tolerably distinct, is extremely valuable. The Russians sell the skins of Lynxes to the Chinese, at a rate from about fifteen shillings to five or six pounds each, exclusive of the fore-feet, which are also valuable and sold separately.

THE CARACAL.

The Caracal is found in most parts of Asia and Africa. It derives its name from the black tips of its ears, which render it a very conspicuous animal. It is one of the group of the Lynxes, and is generally supposed to be the animal referred to by several ancient authors under the name of Lynx. It lives on the smaller quadrupeds and Birds, which it pursues even to the tops of the trees. There are no records of its being tamed, as in every instance when confined it snarls at those who approach its cage. The length of its body is about two feet and its height about fourteen inches.

THE CARACAL.

THE OCELOT.

THE OCELOT WITH ITS PREY

The Ocelot, one of the Tiger-Cats, is a native of Mexico and Peru. Its height is about eighteen inches, and its length about three feet. It is a most beautiful animal, and is easily tamed. When in a wild state it lives principally on Monkeys, which it takes by stratagem.

OF THE WEASEL TRIBE.

THESE animals have, in each jaw, six sharp cutting-teeth, and the canine-teeth somewhat longer; a long and slender body, with short legs; a sharpened visage; and in most species, a longish tail. In some animals of this tribe the tongue is smooth; and in others, it is furnished with prickles that point backwards.

These are all carnivorous animals. From their slender and lengthened bodies, short legs, and the very free motion in every direction, permitted by the loose articulations of the spine, they are well formed for pursuing their prey into the deepest recesses. Constituted by

nature to subsist on animals, many of which have great strength and courage, the Weasels possess an undaunted and ferocious disposition. The species are extremely numerous.

THE ICHNEUMON.

The length of the Ichneumon, from the tip of the nose to the end of the tail, is from twenty-four to forty-two inches, of which the tail occupies nearly half. Its color is pale reddish-gray, each hair being mottled with brown or mouse-color. The eyes are of a bright red; the ears almost naked, small, and rounded; and the nose is long and slender. The tail is very thick at the base; and gradually tapers towards the point, where it is slightly tufted. The hair is hard and coarse, and the legs are short.

The estimation in which this animal is held, by the inhabitants of Egypt, and other hot climates, is so great, that it was formerly ranked among their deities. The natural enemy of serpents and other noxious reptiles that infest these countries, it unsparingly attacks them whenever it has an opportunity. It combats, without dread, that most fatal of all serpents, the Cobra di Capello. The eggs of Crocodiles it digs out of the sand, and devours; and it even kills great numbers of young Crocodiles.

The Ichneumon is frequently domesticated, and kept in houses, where, in destroying Rats and Mice, it is found more useful than a Cat. It is easily tamed, is very active, and springs with great agility on its prey. It will slide along the ground almost like a Serpent. It sits upright to eat, uses its fore-feet, and catches at any thing that is flung to it. The Ichneumon is a great enemy to poultry, and will feign itself dead to attract them within its reach; and the address with which it seizes a Serpent by the throat, is very remarkable.

Fouche d' Obsonville had an Ichneumon very young, which he brought up. He fed it at first with milk; and afterwards with baked meat mixed with rice. It soon became even tamer than a Cat; for it would come to him when called, and would even follow him into the fields without attempting to escape.

One day M. d' Obsonville brought to this animal a small Water-Serpent alive, being desirous of ascertaining how his instinct would lead him to act against a creature with which he was hitherto totally unacquainted. His first emotion seemed to be astonishment mixed with anger, for his hair became erect; but in an instant afterward, he slipped behind the reptile, and with astonishing agility leaped upon its head, seized it, and crushed it between his teeth. This essay, and new aliment, seemed to have awakened in the Ichneumon his innate and destructive voracity, which, till then, had given way to the gentleness he had acquired from his education. M. D'Obsonville had in his yard several curious kinds of fowls, among which the animal had been brought up, and which, till then, he had suffered to live unmolested and indeed unregarded· but, a few days after this he strangled every one of them.

In a wild state, the Ichneumon is said to frequent principally the banks of rivers; and in times of flood to approach the higher grounds and inhabited places, in quest of prey. He is reported to swim and dive occasionally, in the manner of an Otter; and to continue beneath the water for a great length of time. When he sleeps, he folds himself up like a ball, and is not easily awaked. Ichneumons are short-lived, and grow very rapidly. In northern climates, they cannot, without difficulty, be either reared or preserved. Whatever care be taken, the frosts incommode them, and they generally soon fall victims to the change.

THE STRIATED WEASEL, OR SKUNK.

The length of this animal, from the nose to the tail, is about eighteen inches; and of the tail fourteen inches. The upper parts of the body are variegated or striped with black and white. The neck and legs are very short. The tail is clad, towards its extremity, with long, whitish hair.

THE SKUNK.

This is one of three or four species of Weasel, natives of America, whose only mode of defence against their enemies (and it is a perfectly secure one) is to emit from their bodies a vapor so fetid, that few animals can bear to come within its influence. Cattle that are near are so alarmed, as to utter the most dreadful bellowings. Dogs are indeed sometimes trained to hunt them; but, in order to relieve themselves, they are under the necessity of frequently thrusting their noses into the earth. The odor may be perceived to an amazing distance; and so abominable is it, that provisions tainted by it can never afterwards be rendered eatable. When a Striated Weasel is irritated or killed near a dwelling, the whole place becomes infected; the clothes, provisions, and all the rooms are, in a few minutes, so saturated with the vapor, that no one can live in or use them for a long time afterwards. Clothes, although several times washed, soaked, and dried in the sun, retain their smell sometimes for weeks.

Professor Kalm says, that a Striated Weasel being one day perceived in its cave, a woman, unthinkingly, attacked and killed it. The whole place was in a moment filled with such a dreadful stench, that the woman was taken ill, and continued so for several days; and the provisions were so infected, that they were all thrown away.

It appears that these animals are, in some degree, attached to the society of mankind. They approach without apprehension, and boldly enter the country houses to search for eggs, passing fearlessly, even through the midst of Dogs, which, instead of attacking them, generally run away at their approach. The husbandmen themselves dislike to shoot them on such occasions, lest they should fail of killing them,

and be assailed by their nauseous stench. In order to free themselves from such unwelcome visitors, they have recourse to stratagem. Some

DOG DRIVEN OFF BY THE ODOR OF A SKUNK.

of the company begin by caressing the animal, until an opportunity offers for one of them to seize it by the tail and hold it suspended; and in this position it may be killed without either difficulty or danger.

Strange as it may appear, these animals are sometimes domesticated; and as they never emit their fetor except when alarmed or irritated, they are not dreaded in this state. In February, 1820, there was one exhibited in the Menagerie at Exeter 'Change London.

THE HONEY WEASEL, OR RATEL.

From the nose to the tail, the Ratel measures about two feet. Its back is cinereous; and along the sides runs a light-grey stripe that divides this from the belly, which is black. The legs are short; and the claws long, and formed for burrowing.

Formed by nature to be the adversary of Bees, and the unwelcome visitor of their habitations, the Ratel is endued with a particular faculty of discovering and attacking them within their entrenchments. As a man placed at the mast-head, can most easily descry a sail or land at a great distance in the evening; so, probably, this time of the day is most convenient for the Ratel to look out for his food. Towards sunset he issues from his hole. Near this he sits upright, and holds one of his paws before his eyes, in order to modify the rays of the sun, and at the same time to procure a distinct view of the object of his pursuit: and when, in consequence of peering thus on each side of his paw, opposite to the sun, he sees any Bees fly, he knows that they are proceeding straight to their habitation, and consequently takes care to keep in the same direction in order to find them. He has, besides, the sagacity to follow the *Cuculus Indicator*, a little bird, which flies on, with a peculiar and alluring note, and guides him to the Bees'-nests.

THE RATEL.

The Ratel is a native of the Cape of Good Hope, and his hide is so thick and tough that there is scarcely any way of destroying him but by beating him about the head, or plunging a knife into his body. The shortness of his legs will not permit him to make his escape by flight when pursued by hounds. He is, however, sometimes able to extricate himself from them by biting and scratching them in a most terrible manner; while on the other hand, he is well defended from the assaults of their teeth by the toughness of his hide. For, when a Hound endeavors to bite him, it can lay hold only on this part, which instantly separates from the Ratel's body or flesh, like a sack. Even when laid hold of by the hind part of the neck, and near his head, this animal can, as it were, turn round in his skin, and bite his enemy. It is a remarkable circumstance, that such a number of Hounds as would be able collectively to tear in pieces a Lion of moderate size, are sometimes obliged to leave the Ratel dead only in appearance. Is it not probable that the Creator, who seems to have destined the Ratel for the destruction of Bees, may have bestowed on it a hide so much tougher than those

RATEL ATTACKING A WILD BEE'S NEST.

he has given to other animals of the Viverra kind, for the purpose of defending it from the stings of these insects?

Those Bees'-nests that are built in trees, are in no danger whatever from the attacks of this animal. In the first transports of his rage at having sought after such in vain, he gnaws the trunks of the trees; and these marks are sure indications to the inhabitants of the country, that a Bees'-nest is to be found there.

THE CIVET.

The Civet is somewhat more than two feet long, and has a tail about half the length of its body. The ground color is yellowish ash-grey, beautifully marked with large blackish or dusky spots. The hair is coarse; and, along the back, it stands up, so as to form a sort of mane. The body is thickish; and the nose sharp, and black at the tip. Three black stripes proceed from each ear, and end at the throat and shoulders.

THE CIVET.

It is an inhabitant of several parts both of Africa and India.

There are few animals more active and nimble than the Civet; it jumps about like a Cat, in the most animated manner, and runs with wonderful speed. The Civet feeds on small animals, but particularly on birds, which it takes by surprise; and it sometimes commits depredations among poultry, when it can steal unperceived into a farm-yard. It is a very voracious animal. One that M. Barbot had at Guadaloupe was accidentally kept without food for a whole day; the animal on the ensuing morning, gnawed his way through the cage in which he was kept, came into the room where M. Barbot was writing, and, staring about with sparkling eyes for a few seconds, made a leap of five or six feet at a Parrot, that was perched on a piece of wood put into the wall for the purpose: before his master could run to the relief of the bird, the Civet had torn off its head.

This animal is remarkable for the production of the drug called civet, sometimes erroneously confounded with musk. This is a substance which is found in a large double glandular receptacle, situated at a little distance beneath the tail. The Dutch keep at Amsterdam great numbers of Civets, for the purpose of collecting the drug from them. When a sufficient time for the secretion has been allowed, one of these animals is put into a long wooden cage, so narrow that it cannot turn itself round. The cage being opened by a door behind, a small spoon, or spatula, is introduced through the orifice of the pouch, which is carefully scraped. This operation is performed twice or thrice a-week; and the animal is said always to produce the most civet, after being irritated. The quantity also depends in a great measure on the quality of the nourishment which it takes, and the appetite with

which it eats. In confinement, its favorite food is boiled meat, eggs, birds, and small animals, and particularly fish.

There is a Civet in the Jardin des Plantes at Paris, which has been there several years. Its odor is at all times very powerful, but unusually so whenever it is irritated. It sleeps with its body rolled round, and its head between its legs. This posture it seldom changes either in the night or day; and it sleeps so soundly, that it cannot be roused without severe blows.

With respect to the *civet* procured from Amsterdam, it is less adulterated, and therefore held in higher estimation, than that imported from India or the Levant. Its average value in Holland is about fifty shillings an ounce; but this is subject to considerable fluctuation. The substance is accounted best when new, of a whitish color, a good consistence, and of a strong, disagreeable smell. This perfume is excessively powerful; but in small quantities it is more pleasant than musk, to which it bears some resemblance.

JAVANESE CIVET.

In a native state these animals are found in Guinea and the central parts of Africa. They inhabit only arid and sandy countries, and never frequent such as are humid and shady. A species of the Civet is found in Java with a long pointed tail.

THE COMMON MARTIN AND PINE MARTIN.

These animals are each about eighteen inches long. They are of a dark chesnut color on the upper parts. The Common Martin is white on the throat and breast; and the Pine Martin yellow.

They are natives of Great Britain; and of various parts both of the old and new continent.

THE MARTIN.

The general retreats of the Martin and Pine Martin are the hollows of decayed trees, so high up, and in other respects so situated, as to afford them perfect security. The place adopted for the nest of a Squirrel is generally preferred to any other. Of this the Martin dispossesses the ingenious architect by killing him. The new tenant now enlarges the dimensions of its habitation, lines it with softer materials, and, in this secure retreat, produces its young.

The courage of the Martin is so great, that it will attack animals much larger and stronger than itself. In a wild state it is sometimes

very ferocious; but it may be rendered tame and docile. Gesner says, he kept a Pine Martin which was extremely playful and entertaining. It used to go to the houses of the neighbors, and it always returned home when it wanted food. It was particularly fond of a Dog with which it had been bred up; and would play with him as Cats do, lying on its back, and pretending to bite him. M. de Buffon had one, which, though it had lost its ferocity, did not, however, discover any marks of attachment, and continued so wild as to require being chained. It frequently escaped from its confinement. At first it returned, after some hours' absence, but without appearing pleased; the time of absence of each succeeding elopement gradually increased, and at last it took a final departure. During its confinement, it sometimes slept for two days without intermission.

These animals have a musky smell, which to many persons is very agreeable. Their cry is sharp and piercing; but is never uttered except when in pain or distress. Their principal food consists of rats, mice, and other small quadupeds; of poultry, and game: they are also remarkably fond of honey.

The female produces three or four young-ones at a litter, which soon arrive at a state of maturity. She is able to afford them but a small quantity of milk; but she compensates for this defect, by bringing to them eggs and live birds in abundance; and she thus early accustoms them to a life of carnage and plunder. As soon as the young-ones are able to leave the nest, she leads them through the woods; where they begin to seize on their prey, and to provide food for themselves.

Pine Martins are hunted in the North for the sake of their furs, which are held in great estimation: the most valuable part is that which extends along the back. In England these are used to line the robes of magistrates, and for several other purposes. They form a considerable article of commerce; above twelve thousand being annually imported into England from Hudson's Bay, and more than thirty thousand from Canada.

PINE MARTIN.

Among the American varieties of the Martin is the Fisher, found in Canada and New England, much detested by trappers for robbing their traps.

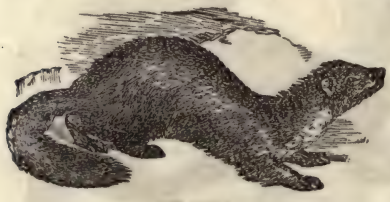
FISHER ATTACKING A HARE.

THE SABLE.

This animal is about eighteen inches in length; and, in its general shape, has a great resemblance to the Martin. The head is longish, and the muzzle somewhat sharpened. Its color is a deep glossy brown.

It is a native of North America, Siberia, Kamtschatka, and Asiatic Russia.

Sables frequent the banks of rivers, and the thickest parts of the woods. They live in holes under the ground, and especially under the roots of trees; but they sometimes make their nests (consisting of moss, small twigs, and grass) in the hollows of trees. In winter they live on berries of different kinds; but in summer-time, before these are ripe, they devour Hares, Weasels, Ermines, and other small animals. They are sprightly and active creatures; and are able, with wonderful agility, to leap from tree to tree, in the pursuit of Squirrels and Birds.



THE SABLE.

Two of these animals which had been in some measure domesticated, are described by M. Gmelin. He says, that whenever they saw a Cat, they would rise on their hind feet to prepare for combat. In the night, they were extremely restless and active; but during the day, and particularly after eating, they generally slept so sound for half an hour, or an hour, that they might be pushed, shaken, and even pricked without being awakened.

The skin of the Sable is more valuable than that of any other animal of equal size. One of these skins, not more than four inches broad, has sometimes been valued at as high a rate as fifteen pounds; but the general price is from one pound to ten pounds, according to the quality. The Sable's fur is different from all others, in the hair turning with equal ease either way. The bellies of Sables, which are sold in pairs, are about two fingers in breadth; and are tied together in bundles of forty pieces, which are sold at from one to two pounds a bundle. The tails are sold by the hundred, at from four to eight pounds.

The manner in which the natives of Kamtschatka catch these animals is very simple. They follow the track of the Sable, in snow-shoes, till they have detected his covert, which is generally a burrow in the earth. As soon as the little creature is aware of his pursuers, he escapes into some hollow tree. This the hunters surround with a net, and then they either cut it down, or force the animal by fire and smoke to abandon his retreat, when he falls into the net and is killed. The tree in which a Sable is lodged, they sometimes surround with Dogs trained for the purpose; and then, making a running noose on a strong cord, they find means to get the creature's head into the snare, and thus haul him down an easy prey.

The chase of the Sable, during the more barbarous periods of the Russian empire, was the principal task of the unhappy exiles who were banished into Siberia; and who, as well as the soldiers sent there, were obliged to furnish, within a given time, a certain quantity of furs: but as Siberia is now become more populous, the Sables have, in a great measure, quitted this part of the country, and retired further to the north and east, into the desert forests and mountains.

THE POLECAT, OR FITCHET.

The length of the Polecat, exclusive of the tail, is about seventeen inches; and of the tail three inches. In shape this animal resembles the Martin. The ears are short, and tipped with white. The tail is covered with longish hair. The general color is a deep chocolate, nearly approaching to black.

THE POLECAT.

The Polecat is not afraid of the presence of mankind, but approaches with confidence our dwellings, mounts to their roofs, and often resides in barns, hay-lofts, or other places that are not much frequented. Thence he issues, under the shadow of night, to commit his depredations on eggs and poultry. He is exceedingly agile, and runs very fast. In the act of running, his belly seems to touch the ground; but, in preparing to jump, the animal arches his back very much, and by this means the projectile force of his body is greatly increased. In farm-yards, the Polecat makes less noise but commits more mis-

chief than the Martin. If, deterred by the narrowness of the entrance, he cannot convey the fowls away, he is said to eat the brain on the spot, and to carry off the heads to his place of concealment, leaving the bodies behind.

In Lorraine, and some of the adjacent cantons, Polecats are very numerous; and consequently there, as elsewhere, they commit great havoc in the poultry-yards. Yet, says M. Sonnini, such are the superstitious prejudices in their favor, that the inhabitants will on no account attempt to destroy them. They pretend that Polecats never commit any damage in the dwellings where they reside; thus, at the same time that they know and acknowledge their voracious disposition, they believe that the animals entertain a singular respect for hospitality.

The Polecat, during summer, generally lives in woods, thick brakes, or about Rabbit-warrens. Here, if he cannot find ready-made a hole that suits him, he forms for himself, in the ground, a retreat not usually more than two yards in length, which if possible, he contrives to end among the roots of some large tree. Issuing thence, he often commits surprising depredations on game and Rabbits. A single family of Polecats, left undisturbed, are sometimes sufficient to destroy a whole warren. It is asserted that these animals are so fond of honey, that, in winter, when the Bees are weakened by the rigors of the season, they have been known to attack the hives, and voraciously to devour their contents.

That the Polecat will sometimes prey upon Fish, is a circumstance that was known to several of the old writers on Natural History, and is noticed both by Aldrovandus and Johnston. A curious fact, illustrative of this propensity, is recorded in Bewick's History of Quadrupeds. During a severe storm, a Polecat was tracked in the snow, from the side of a rivulet to its hole, at some distance. On examining this hole, it was found to contain eleven eels, the fruits of some of the animal's nocturnal excursions.

The smell of the Polecat is proverbially fetid, the animal being furnished, like several others of its tribe, with certain receptacles for secreting a thickish fluid, which has a peculiarly strong and offensive odor. When the Polecat is heated or enraged, the stench is sometimes perceptible to a considerable distance. Notwithstanding this, its fur is both beautiful and valuable. The skins taken from animals killed in winter, are the most valuable.

The female Polecats produce their young-ones, from three to six in number, in the beginning of summer. This is usually done either in or near the out-house of some farm. Like the Martins, these animals do not suckle them long, but soon accustom them to animal food.

THE FERRET.

The Ferret is somewhat smaller than the Polecat. Its eyes are red; and the general color of its body a dingy but pale yellow.

Great as is the general resemblance, in their manners and habits,

between the Ferret and the Polecat, it is evident that they are of distinct species. The Ferret is a native of Africa, and has been imported into Europe for the purpose of being employed in driving Rabbits from their burrows. Although easily tamed and rendered docile, these animals are exceedingly irascible; and, if at all provoked, will inflict very severe wounds with their teeth. Their smell is strong and offensive.

THE FERRET.

Ferrets are generally kept in casks or chests, well supplied with hay or straw; on which they sleep almost through the whole day. The females usually produce six or seven young-ones at a litter. These are blind for a month; and, after two months, are sufficiently old to be employed in the Rabbit warrens. They ought not to be fed immediately before they are used in the burrows; because, in this case, they become indolent and may not hunt. It is also necessary that, in this operation, they should be muzzled, in order that they may not satiate their appetite in the holes; for, after having sucked the blood of the Rabbits, they will often fall asleep, and continue under ground for many hours.

A mixed breed, between the Ferret and the Polecat, is sometimes used by the warreners, and is considered in some respects preferable to the whole-bred Ferret.

THE COMMON WEASEL.

The length of the Weasel, exclusive of the tail, is about seven inches; and its height is not more than two and a half. The color of its upper parts is a pale reddish brown; and its breast and belly are white; but on each side, below the corners of the mouth, there is a brown spot. The ears are small and rounded, and the eyes black.

THE COMMON WEASEL.

The Weasel is a beautiful and active little animal, well known to husbandmen and farmers in almost every part of Great Britain. It lives chiefly in cavities under the roots of trees, and in the banks of rivulets; from which it issues, at the approach of evening, to commit its depredations; and there is no creature of its size, more destructive to young Birds, Poultry, or Rabbits, than this. It also sucks eggs with great avidity. In this operation, it begins by making a small hole at one end, from which it licks out the yolk, leaving the shell behind; whereas Rats, and some other animals, drag the egg out of the nest, and either make a large hole in it or break it to pieces. By this circumstance the attacks of the Weasel may always be distinguished from those of a Rat.

M. de Buffon supposed the Weasel to be untameable; but Made-

moiselle de Laistre, in a letter written to him on this subject, gives a very pleasing account of the education and manners of a Weasel which she took under her protection. This she fed with fresh meat and milk, the latter of which it was very fond of. It frequently ate from her hand, and seemed to be more delighted with this mode of feeding than any other. "If I pour some milk into my hand, (says this lady,) it will drink a good deal; but if I do not pay it this compliment, it will scarcely take a drop. When satisfied it generally goes to sleep. My chamber is the place of its residence; and I have found a method of dispelling its strong smell by perfumes. By day, it sleeps in a quilt, into which it gets by an unsewn place which it has discovered on the edge: during the night, it is kept in a wired box or cage; which it always enters with reluctance, and leaves with pleasure. If it be set at liberty before my time of rising, after a thousand little playful tricks, it gets into my bed, and goes to sleep in my hand or on my bosom. If I am up first, it spends a full half-hour in caressing me; playing with my fingers like a little Dog, jumping on my head and on my neck, and running round on my arms and body, with a lightness and elegance which I have never found in any other animal. If I present my hands at the distance of three feet, it jumps into them without ever missing. It exhibits great address and cunning to compass its ends, and seems to disobey certain prohibitions merely through caprice. During all its actions, it seems solicitous to divert, and to be noticed; looking, at every jump, and at every turn, to see whether it be observed or not. If no notice be taken of its gambols, it ceases them immediately, and betakes itself to sleep: and even when awakened from the soundest sleep, it instantly resumes its gaiety, and frolics about in as sprightly a manner as before. It never shows any ill-humor, unless when confined, or teased too much; in which case it expresses its displeasure by a sort of murmur, very different from that which it utters when pleased.

"In the midst of twenty people, this little animal distinguishes my voice, seeks me out, and springs over every body to come at me. His play with me is the most lively and caressing imaginable. With his two little paws he pats me on the chin, with an air and manner expressive of delight. This and a thousand other preferences, show that his attachment to me is real. When he sees me dressed for going out, he will not leave me, and it is not without some trouble that I can disengage myself from him; he then hides himself behind a cabinet near the door, and jumps upon me as I pass, with so much celerity that I often can scarcely perceive him.

"He seems to resemble a squirrel in vivacity, agility, voice, and his manner of murmuring. During the summer, he squeaks and runs about all night long; but since the commencement of the cold weather I have not observed this. Sometimes, when the sun shines while he is playing on the bed, he turns and tumbles about and murmurs for a while.

"From his delight in drinking milk out of my hand, into which I pour a very little at a time, and his custom of sipping the little drops and edges of the fluid, it seems probable that he drinks dew in the

same manner. He seldom drinks water, and then only for want of milk, and with great caution; seeming only to refresh his tongue once or twice, and even to be afraid of that fluid. During the hot weather, it rained a good deal. I presented to him some rain-water in a dish, and endeavored to make him go into it, but could not succeed. I then wetted a piece of linen cloth in it, and put it near him; and he rolled upon it with extreme delight.

"One singularity in this charming animal is his curiosity. It is impossible to open a drawer or a box, or even to look at a paper, but he will examine it also. If he get into any place where I am afraid of permitting him to stay, I take a paper or a book, and look attentively at it; on which he immediately runs upon my hand, and surveys with an inquisitive air whatever I happen to hold. I must further observe, that he plays with a young Cat and Dog, both of considerable size; getting about their necks, backs, and paws, without their doing him the least injury."

According to the account given by M. de Buffon, the method of taming these creatures is to stroke them gently over the back; and to threaten, and even beat them when they attempt to bite.

The motion of the Weasel consists of unequal leaps; and it can spring several feet from the ground. It is a remarkably active animal, and it will run up a wall with such facility, that no place is secure from it. It is useful to the farmer in ridding him of Rats and Mice, which it will pursue into their holes and there kill; but its depredations are not altogether confined to these pernicious animals, as it also frequently destroys young poultry and Pigeons. It seizes its prey near the head, but seldom eats it on the spot; and often destroys Moles in their habitations. We are told that when the Weasel pursues the Hare, that timid creature is terrified into a state of absolute imbecility; and gives itself up without the least resistance, making, at the same time, the most piteous outcries.

A story is related, that an Eagle having seized a Weasel, mounted into the air with it, and was soon afterwards observed to be in great distress. The Weasel so far extricated himself, as to be able to bite the Eagle very severely in the neck; which presently brought the bird to the ground, and gave the Weasel an opportunity of escaping.

The female produces her young-ones in the spring of the year; and prepares for them a bed of straw. Aldrovandus tells us, that when she suspects they will be stolen, she carries them in her mouth from place to place, changing her retreat even several times a-day. M. de Buffon informs us, that, in his neighborhood, a Weasel with three young-ones was taken out of the body of a Wolf, that had been hung up on a tree by the hind-feet. The Wolf was in a state of putrefaction; and the Weasel had made a nest of leaves and herbage in the thorax.

Among other curious particulars respecting this animal, it has been observed, that, when asleep, its muscles are in a state of such extreme flaccidity, that it may be taken up by the head, and several times swung backward and forward, like a pendulum, before it will awake.

THE STOAT, OR ERMINE.

In northern climates this animal is brown in summer, and white in the winter. In the former of these states it is denominated *Stoat*, and in the latter *Ermine*. The tip of its tail, however, continues always black. Its habits of life are similar to those of the Weasel.

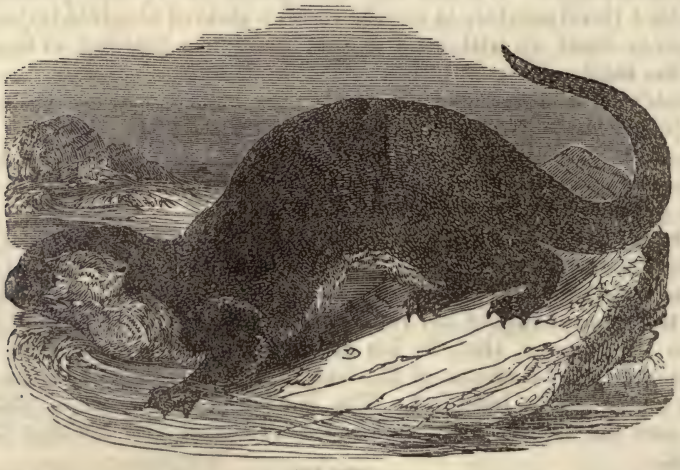
THE GENET.

THE GENET.

The Genet slightly resembles the Cat, particularly in its spots, and the power of climbing trees. It inhabits Africa, and is not unfrequently found in the south of France. At Constantinople it is domesticated, and keeps the houses free from Rats and Mice, which are said to be unable to endure its scent, but it is much more probable that it frees the houses from mice by devouring them.

OF THE OTTERS IN GENERAL.

OTTERS have in each jaw, six sharpish cutting teeth; the lower ones



THE OTTER.

of which do not stand in an even line with the rest, but two are placed somewhat within the others. The canine teeth are rather longer than the other teeth. All the animals of this tribe have webbed feet.

There are about eight ascertained species of Otters. These animals

differ much from the Weasels in their habits. They live almost constantly in the water, from which they principally derive their food. Their bodies are very long, and their legs short. They burrow and form dwellings in the banks of rivers and lakes, in the neighborhood of the situations where they find their prey.

THE COMMON OTTER.

This animal is about two feet in length, from the nose to the insertion of the tail; and the length of the tail is nearly sixteen inches. Its legs are short, but strong and muscular. The head is broad, oval, and flat on the upper part; and the body is long and round. The legs are so placed as to be capable of being brought into a line with the body, and of performing the office of fins. The toes are connected by webs. The general color of the body is a deep brown.

The habitation of the Otter is almost always made in the bank of a river or brook, in the immediate neighborhood of which he can be furnished with a plentiful supply of food. In forming his habitation, this animal exhibits great sagacity. He burrows under ground in the bank, and always makes the entrance of his hole under water, working upward towards the surface of the earth; and, before he reaches the top, he provides several *holts* or lodges, that in case of high floods he may have a retreat, and then make a minute orifice for the admission of air. It is further observed, that, the more effectually to conceal his retreat, he contrives to make this little air-hole in the midst of some thick bush.

In some parts of North America, Otters are seen in winter at a distance from any apparent open water, both in woods and on plains; but it is not known what leads them to such situations. If pursued, when among the woods where the snow is light and deep, they immediately dive, and make considerable way under it; but they are easily traced by the motion of the snow above them, and soon overtaken. The Indians track them in the snow, and with clubs kill great numbers of them.

These creatures are sometimes frolicsome and playful: and one of their favorite pastimes is, to get on a high ridge of snow, bend their fore-feet backward, and slide down the side of it, sometimes to the distance of twenty yards or upwards.

Otters, though naturally of a ferocious disposition, may, if taken young and properly educated, be completely tamed. The training of them, however, requires both assiduity and perseverance: but their activity and use, when taught, sufficiently repay this trouble; and few animals are more beneficial to their masters. The usual method is first to teach them to fetch, in the same way as dogs are taught; but, as they are not so docile as the dog, so it requires more art and experience to instruct them. They are first taught to take in their mouths a truss made of leather, and stuffed with wool, of the shape of a fish; to drop it at a word of command; to run after it when thrown forward, and to bring it to their master. Real fish are next employed; which

are thrown dead into the water, and which they are taught to fetch. From dead fish they are led to living ones, till at last they are perfectly instructed in the whole art of fishing. An Otter thus educated is a very valuable animal; he will catch fish enough to sustain not only himself but a whole family. "I have seen (says Dr. Goldsmith) an Otter go to a gentleman's pond at the word of command, drive the fish into a corner, and, seizing upon the largest of the whole, bring it off, and give it to his master."

We are informed, in Mr. Bewick's History of Quadrupeds, that a person of the name of Collins, who lived at Kilmerston, near Wooler, in Northumberland, had a tame Otter, which followed him wherever he went. He frequently took it to fish in the river; and, when satiated, it never failed to return to him. One day, in the absence of Collins, the Otter, being taken out to fish by his son, instead of returning as usual, refused to come at the accustomed call, and was lost. The father tried every means in his power to recover the animal, and, after several day's search, being near the place where his son had lost it, and calling it by name, to his inexpressible joy it came creeping to his feet, and showed many marks of affection and attachment.

Some years ago, James Campbell, near Inverness, had a young Otter, which he brought up and tamed. It would follow him wherever he chose; and, if called by its name, would immediately obey. When apprehensive of danger from dogs, it sought the protection of its master, and would endeavor to spring into his arms for security. It was frequently employed in catching fish, and would sometimes catch eight or ten salmon in a day. If not prevented, it always made an attempt to break the fish behind the fin next the tail. When tired, it would refuse to fish any longer, and was then rewarded with as much as it could devour. Having satisfied its appetite it always coiled itself round, and fell asleep; in which state it was generally carried home. The same Otter fished both in the sea and in fresh water.

Another person who kept a tame Otter, suffered it to follow him with his dogs. It was very useful to him, by going into the water, and driving trout and other fish towards his net. It was remarkable, that Dogs accustomed to Otter-hunting were so far from giving it the least molestation, that they would not even hunt any Otter while this one remained with them.

In a wild state, when an Otter has caught a fish, he immediately drags it ashore, and devours the head and upper parts, leaving the remainder of the body; and when domesticated, he will eat no fish except such as are perfectly fresh; but will prefer bread, milk, &c. This animal generally hunts against the stream; and, when several Otters are fishing at the same time, they are frequently heard to utter a sort of loud whistle to each other, as if by way of signal. When two of them (as sometimes happens) are hunting a salmon, one stations itself above, and the other below the place where the fish is; and they continue to chase it, till becoming perfectly wearied out, it surrenders itself a quiet prey. The Otter, when it hunts singly, has two modes of taking its prey. The first is by pursuing it from the bottom upward; this is principally done with the larger fish; whose eyes being

placed so as not to see under them, the animal attacks them by surprise from below, and seizing them by the belly, drags them away. The other mode is by hunting them into some corner of a pond or lake, and there seizing them. The latter, however, can only be practised in water where there is no current, and on the smaller fish; for it would be impossible to force the large ones out of deep water.

Female Otters produce four or five young-ones at a birth, and these in the spring of the year. Where there have been ponds near a gentleman's house, instances have occurred of their littering in cellars or drains. The male utters no noise when taken, but the female sometimes emits a shrill squeak.

Otters are generally caught in traps placed near their landing-places, and carefully concealed in the sand. When hunted by Dogs, the old ones defend themselves with great obstinacy. They bite severely, and do not readily quit their hold.

In the Northern parts of America, these animals change their color in winter to white, like most of the other Arctic animals; and it is not till late in the spring that they resume their brown summer dress.

The flesh of the Otter is exceedingly rank and fishy; so much so, that the Romish church permit the use of it as food on maigre-days. In the kitchen of the Carthusian convent near Dijon, M. Pennant saw one of these animals cooked for the dinner of the religious of the rigid order; who by their rules are prohibited, during their whole lives, the eating of flesh.

THE SEA OTTER.

The whole length of the Sea Otter is generally about four feet, of which the tail occupies thirteen inches. The fur is soft, and of a deep glossy black color. The ears are small and erect, and the whiskers long and white. The legs are short and thick, the hinder ones somewhat resembling those of a Seal. The weight of the largest Sea Otters is from seventy to eighty pounds.

THE SEA OTTER.

In their general habits of life, these animals are harmless and inoffensive; and, toward their offspring they exhibit a degree of attachment which is extremely interesting. They will never desert them; they will even starve themselves to death on being robbed of them, and strive to breathe their last on the spot where their young-ones have been destroyed. The Sea Otters live in pairs, and are very constant to each other. They often carry their young-ones between their

teeth, and fondle them, frequently flinging them up and catching them again in their paws. Before these can swim, the parents will take them in their fore-feet, and swim about with them upon their backs.

Sea Otters swim sometimes on their sides; and at other times on their backs, or in an upright position. They are very sportive, embrace each other, and seem to kiss. When attacked, they make no resistance, but endeavor to save themselves by flight: if, however, they be closely pursued, and can see no means of escape, they scold and grin like an angry Cat. On receiving a blow they lie on their side, draw up their hind-legs together, cover their eyes with their fore-paws, and thus seem to prepare themselves for death. But if they are fortunate enough to escape their pursuer, and reach the sea, they deride him with various diverting tricks; at one time swimming upright in the water, and jumping over the waves, holding their fore-paws over their eyes, as if to shade them from the sun while looking out for their enemy; then lying flat on their backs; and afterwards throwing their young-ones down into the water and fetching them up again.

The skins of Sea Otters are of great value, and have long formed a considerable article of export from Russia. They are sold to the Chinese at the rate of eighty or a hundred rubles each. The trade for this fur at Nootka had, not many years ago, nearly produced a war between Great Britain and Spain.

These animals are found on the coast of Kamtschatka, and in the adjacent islands, as well as on the opposite coasts of America; but they are confined within a very few degrees of latitude.

OF THE BEAR TRIBE.

THE Bears have six front teeth in each jaw. The two lateral ones of the lower jaw are longer than the rest, and lobed with smaller or secondary teeth at their internal bases. There are five or six grinders on each side; and the canine teeth are solitary. The tongue is smooth, and the snout prominent. The eyes are furnished with a nictitating or winking membrane.

The Bears are animals, for the most part, of large size, and great muscular powers. They are seldom found in any other than mountainous or thinly-inhabited countries. During the winter, several of the species lie concealed in holes in the ground, and in a torpid state.

Some of the species are able to use their fore-feet as hands, in conveying food to their mouth, or in seizing hold of objects. From the length and sharpness of their claws, huge and unwieldy as they may seem, these animals are able to climb trees in search of prey, or to escape the pursuit of their enemies.

THE COMMON BEAR.

The Bear is a savage and solitary animal, that lives in the most retired and unfrequented parts of the forests. He passes the greatest part of the winter in his den, in a state of repose and abstinence. During this period it is that the females bring forth their young-ones, which are generally two in number. When these animals retire into their places of concealment, they are always fat and in high condition; and when they make their first appearance in the spring they are, on the contrary, excessively lean and emaciated. In consequence of this, a general, though absurd notion prevails, that they are enabled to live through the winter by sucking their paws. They are fond of honey, and often attack bee-hives to obtain it.

THE BEAR.

The Common Bears, which are not only inhabitants of Europe, but of various parts of the East Indies, vary much in color. Some are brown, others black, and others gray. The Brown kinds live chiefly on vegetables; and the Black ones, in a great measure, on animal food, such as Lambs, Kids, and even Cattle. We are informed that the Black Bears are so remarkably attached to each other, that the hunters never dare to fire at a young-one, while the parent is on the spot; for, if the cub happen to be killed, she becomes so enraged, that she will either avenge herself, or die in the attempt. If, on the contrary, the mother should be shot, the cubs will continue by her side long after she is dead, exhibiting the most poignant affliction. A few years ago, in Hungary, a man had nearly lost his life, by firing at a young Bear in the presence of its mother; for she ran at him, and by one blow with her paw, brought off a great part of his scalp.

Bears are so numerous at Kamtschatka, that they are often seen roaming about the plains in great companies; and they would infallibly have long since exterminated all the inhabitants, were they not here much more tame and gentle than the generality of their species are in other parts of the world. In spring, they descend in multitudes from the mountains to the mouths of the rivers, for the purpose

of catching fish. If there be plenty of this food, they eat nothing but the heads of the fish; and when, at any time, they find the fishermen's nets, they dexterously drag them out of the water, and empty them of their contents.

When a Kamtschadale espies a Bear, he endeavors to conciliate its friendship at a distance, accompanying his gestures by courteous words. The Bears are indeed so familiar here, that the women and

BEAR HUNTING IN WINTER.

girls, when gathering roots and herbs, or turf for fuel, in the midst of a whole drove of these animals, are never disturbed by them in their employment; and if any of the Bears come up to them, it is only to eat something out of their hands. They have never been known to attack a man, except when suddenly roused from sleep. This humane character of the Kamtschadale Bear, procures him, however, no exemption from the persecutions of mankind. His great utility is a sufficient instigation to the avarice of man, to declare eternal war against him. Armed with a spear or club, the Kamtschadale goes in quest of the peaceful animal, in his retreat; who, meditating no attack, and intent only on defence, gravely takes the faggots which his persecutor presents to him, and, with them, himself chokes up the entrance to his den. The mouth of the cavern being thus closed, the hunter breaks a hole through the top, from which he transfixes his defenceless foe.

The modes that are adopted by the inhabitants of different countries, for the taking or destroying of Bears, are very various. Of these, the following appears to be the most remarkable. In consequence of the well-known partiality of these animals for honey, the

Russians sometimes fix to those trees where bees are hived, a heavy log of wood, at the end of a long string. When the unwieldy creature climbs up to get at the hive, he finds himself interrupted by the log; he pushes it aside, and attempts to pass it; but, in returning, it hits him such a blow, that in a rage he flings it from him with greater force, which makes it return with increased violence; and he sometimes continues this, till he is either killed, or falls from the tree.

It would be difficult to name a species of animals, except the Sheep, so variously serviceable to man after its death, as the Bear is to the inhabitants of Kamtschatka Of the skin they make beds, covertures, caps and gloves, and collars for their sledge-dogs. Those who go upon the ice for the capture of marine animals, make their shoe-soles of the same substance, which thus never slip upon the ice. The fat of the Bear is held in great estimation, as a savory and wholesome food, and, when rendered fluid by heat, it supplies the place of oil. The flesh is esteemed a great delicacy. The intestines, when cleansed and properly scraped, are worn by the *fair sex*, as masks to preserve their faces from the effects of the sunbeams; which here, being reflected from the snow, are otherwise found to blacken the skin. The Russians of Kamtschatka make of these intestines window-panes, which are as clear and transparent as those made of Muscovy-glass. Of the shoulder-blades are made sickles for cutting grass; and the heads and haunches are hung up by these people, as ornaments or trophies, on the trees around their dwellings.

The Kamtschadales also owe infinite obligations to the Bears, for the little progress they have hitherto made, as well in the sciences, as even in the *polite arts.* They confess themselves indebted to these animals for all their knowledge of physic and surgery: by observing what herbs the Bears apply to the wounds they have received, and what methods they pursue when languid and disordered, this people have acquired a knowledge of most of those simples to which they have recourse, either as external or internal applications. But the most singular circumstance of all is, that they admit the Bears to be their *dancing-masters;* and, in what they call the *Bear-dance*, every gesture and attitude of these animals is so faithfully portrayed, as to afford sufficient indications to whom they are indebted for this acquirement. All their other dances, in many particulars, are similar to the Bear-dance; and those attitudes are considered to approach nearest to perfection, which most resemble the motions of the Bear.

If the uses of the Bear be so various to the Kamtschadales, not less general is that of his fine and warm fur to persons of the higher classes in Russia. A light black Bear-skin is one of the most comfortable and costly articles in the winter wardrobe of a man of fashion, at Petersburg or Moscow.

It is well known that the Bear, though not without difficulty, may be rendered tame and docile; and he has then, at least, the appearance of being mild and obedient to his master. He may be taught to perform various tricks, to entertain the multitude; but great cruelties are practised on the wretched beast, in training him for the purpose of this absurd exhibition.

In the supplementary writings of M. de Buffon, and notes of M. Sonnini, there is an interesting account of some Bears that were

HUNTER IN A BEAR'S DEN.

brought up in a semi-domestic state at Berne, in Switzerland. The animals were kept in large square places, dug out of the earth, and lined at the sides and the bottom with stones. Dens of masonry were formed in them, under the ground of the sides, having their pavement on a level with that of the open space. These dens were each divided by a wall, and an iron grate, the latter of which was let down from above. In the middle of each square there was left in the pavement, a hole sufficiently large to admit a tree of considerable size being placed upright in it. There was likewise, in each square, a large trough filled with fresh water.

It was in 1740, that two Bears, very young, were first taken there from Savoy. When these animals had been there about six years, the female began to produce young-ones. At the first litter, she had only one; and afterwards she produced from one to three, but never more than this number. When first produced, although they were by no means ugly animals, they were very unlike their parents both in shape and color. Their body was nearly round, and their snout somewhat sharp-pointed: they were of a yellow color with a white neck. They continued blind for four weeks. At first they were about eight inches long from the muzzle to the base of the tail: by the end of three months, they measured fourteen or fifteen inches; and their hair was

then about an inch long. Before they were full grown, they cast all their white and yellow hair, and assumed a perfectly brown coat.

The squares in which these animals were first kept, having been in the middle of the town, it was found necessary to fill them up, and to place the Bears in others that were made between the ramparts. The above-mentioned two animals were consequently separated, whilst they were conveyed into their new apartment. When they again met, they appeared in raptures; they raised themselves upright, and embraced each other with the greatest delight.

These animals were very fond of climbing into their tree, which was a green larch, placed there every year in the month of May. They would frequently amuse themselves by breaking pieces off the branches, particularly after the tree was newly planted. Their food was generally rye-bread, cut into large pieces, and soaked in warm water. They were also fond of fruit; and whenever the country people, which was sometimes the case, brought unripe fruit to the market, the officers of the police had orders to seize such, and throw it to the Bears. The animals, however, seemed on the whole to prefer greens and other esculent vegetables to most kinds of food.

Two of the Bears that had been brought up in one of the open squares at Berne, were carried into France, and placed in one of the narrow lodges in the Menagerie of the Museum at Paris, where they had scarcely space enough to turn themselves round. The animals, thus cooped up, were fed on bread, fruit, and vegetables; but they appeared to suffer much from the confined space, which till then they had been entirely unused to. When they were first brought to this menagerie, it was found very difficult to make them leave the cage in which they had been carried. They obstinately persisted in remaining there. To no purpose were various forcible means attempted; and in vain were numerous living animals placed before them, in the hope of enticing them out. They continued immovable; and it was not till after many hours of useless trial, that a living duck, placed at a little distance, tempted them to come forth.

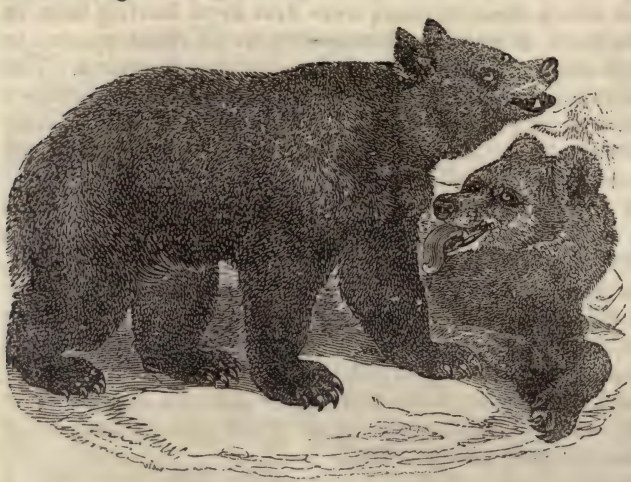
The natural disposition of these Bears was gross; but they were by no means either mischievous or savage animals. They knew the voice of their keeper; and, at all times, showed sufficient docility and obedience to his commands.

THE AMERICAN BEAR.

The American Bear differs from the European species, principally in being smaller; and in having a more lengthened head, more pointed nose, and longer ears. The hair is also more smooth, black, soft, and glossy. The cheeks and throat are of a yellowish-brown color.

In several of the northern districts of America these Bears are found in considerable numbers; occasionally migrating southward in quest of food.

At this time they are always very lean; as they do not leave the north until the ground is covered with snow.



AMERICAN BEAR.

In the country near the Mississippi, the Bears seldom venture to any great distance from the banks of that river; but on each side, they have in winter such beaten paths, that persons unacquainted with them would mistake these for the tracks of men. M. du Pratz, when at a distance of nearly two hundred miles from any human dwelling, was for a while deceived by a bear's track: he thought that thousands of men must have walked along it bare-footed. Upon inspection, however, he found that the prints of the feet were shorter than those of a man, and that at the end of each toe there was the impression of a claw. "It is proper (he says) to observe, that in those paths the Bear does not pique himself upon politeness and will yield the way to nobody; therefore, it is prudent for a traveller not to fall out with him for such a trifling affair."

TRAVELLER FALLING OUT WITH A BEAR.

About the end of December, from the abundance of fruits they find in the Ssouthwestern States, the Bears become so fat and lazy that they can scarcely run. At this time they are hunted by the American Indians. The nature of the chase is generally this: the Bear chiefly adopts for his retreat the hollow trunk of an old cypress-tree; which he climbs, and then descends into the cavity from above

INDIANS HUNTING THE BEAR.

The hunter, whose business it is to watch him into this retreat, climbs a neighboring tree, and seats himself opposite to the hole. In one hand he holds his gun, and in the other a torch, which he darts into the cavity. Frantic with rage and terror, the Bear makes a spring from his station; but the hunter seizes the instant of his appearance, and shoots him.

The pursuit of these animals is a matter of the first importance to some of the Indian tribes, and is never undertaken without much ceremony. A principal warrior gives a general invitation to all the hunters. This is followed by a strict fast of eight days, in which they totally abstain from food; but during which, the day is passed in continual song. This is done to invoke the spirits of the woods to direct the hunters to the places where there are abundance of Bears. They even cut the flesh in divers part of their bodies, to render the spirits more propitious. They also address themselves to the manes of the beasts slain in the preceding chases, and implore these to direct them in their dreams to an abundance of game. The chief of the hunt now gives a great feast, at which no one dares to appear without first bathing. At this entertainment, contrary to their usual custom, they

eat with great moderation. The master of the feast touches nothing; but is employed in relating to the guests ancient tales of feats in former chases; and fresh invocations to the manes of the deceased Bears conclude the whole.

They then sally forth, equipped as if for war, and painted black; and they proceed on their way in a direct line, not allowing rivers, marshes, nor any other impediments to stop their course, and driving before them all the beasts they find. When they arrive at the hunting-ground, they surround as large a space as they can; and then contract their circle, searching at the same time every hollow tree, and every place capable of being the retreat of a Bear: and they continue the same practice till the chase is expired.

As soon as a Bear is killed, a hunter puts into his mouth a lighted pipe of tobacco, and blowing into it, fills the throat with the smoke, conjuring the spirit of the animal not to resent what they are about to do to its body, nor to render their future chases unsuccessful. As the beast makes no reply, they cut out the string of the tongue, and throw it into the fire. If it crackle and shrivel up, (which it is almost sure to do,) they accept this as a good omen; if not, they consider that the spirit of the beast is not appeased, and that the chase of the next year will be unfortunate.

The flesh of the American Bear is said to taste like pork. Dr. Brickell ate some at a planter's house in North Carolina, and mistook it for excellent pork; but such are the prejudices to which mankind are subject, that the next day, being undeceived, and invited to partake of a similar dish, he felt so much disgust that he was not able to taste it.

THE WHITE, OR POLAR BEAR.

THE WHITE BEAR.

The length of this animal is sometimes nearly twelve feet. It differs from the Common Bear in having its head and neck of a more lengthened form, and the body longer in proportion to its bulk. The ears and eyes are small; and the teeth extremely large. The hair is long, coarse, and white; and its limbs of great strength. The tips of the nose and claws are perfectly black.

The immense numbers of these animals, in the polar regions, are truly astonishing. They are not only seen on the

land, but often on ice-floats several leagues at sea. They are sometimes transported in this manner to the very shores of Iceland; where they no sooner land, than all the natives are in arms to receive them. It occasionally happens, that when a Greenlander and his wife are paddling out at sea, by coming too near an ice-float, a White Bear unexpectedly jumps into their boat; and if he does not overset it, sits calmly where he first alighted, and like a passenger suffers himself to be rowed along. It is probable that the Greenlander is never very fond of his unwieldly guest: however, he makes a virtue of necessity, and hospitably rows him to shore.

The Polar Bears are animals of tremendous ferocity. Barentz, in his voyage in search of a North East Passage to China, had the most horrid proofs of their ferocity in the island of Nova Zembla: they attacked his seamen, seizing them in their mouths, carrying them off with the utmost ease, and devouring them even in the sight of their comrades.

Not many years ago, the crew of a boat belonging to a ship in the Whale-fishery shot at a Bear at a little distance, and wounded it. The animal immediately set up a dreadful howl, and ran along the ice towards the boat. Before he reached it, a second shot was fired, which hit him. This served but to increase his fury. He presently swam to the boat, and, in attempting to get on board, placed one of his fore feet upon the gunnel; but a sailor, having a hatchet in his hand, cut it off. The animal, however, still continued to swim after them till they arrived at the ship; and several shots were fired at him, which took effect: but on reaching the ship, he immediately ascended the deck; and the crew, having fled into the shrouds, he was pursuing them thither, when a shot laid him dead upon the deck.

SAILORS AND WHITE BEAR.

The usual food of these animals consist of Seals, Fish, and the carcasses of Whales; but when on land they prey on Deer and other animals. They likewise eat various kinds of berries, which they happen to find. The following story of the sagacity of these animals in searching for prey, is inserted from the works of the Hon. Robert Boyle: "An old sea captain told me that the White Bears in or about Greenland, notwithstanding the coldness of the climate, have an excellent nose; and that sometimes, when the fisherman had dismissed the carcass of a Whale, and left it floating on the waves, three or four leagues from the shore, whence it could not be seen, these animals would stand as near the water as they could, and raising

themselves on their hind legs, would loudly snuff in the air, and, with the paws of their fore-legs, drive it as it were against their snouts; and when they were satisfied whence the odor came, would cast themselves into the sea, and swim directly towards the Whale."

POLAR BEAR ON AN ICEBERG.

During the summer, these animals reside chiefly on the ice-islands; and frequently swim from one to another. They lodge in dens formed in the vast masses of ice; and on these they breed, producing about two young-ones at a birth. About the end of March they bring these out, and immediately bend their course towards the sea.

When the masses of ice are detached by strong winds or currents, the Bears often allow themselves to be carried along with them; and as they can neither regain the land, nor abandon the ice on which they are embarked, they often perish in the open sea.

The affection between the parent and the young is so great, that they will sooner die than desert each other in distress. "While the Carcase Frigate, which went out some years ago to make discoveries towards the North Pole, was locked in the ice, early one morning the man at the mast-head gave notice that three Bears were making their way very fast over the frozen ocean, and were directing their course towards the ship. They had, no doubt, been invited by the scent of some blubber of a Walrus that the crew had killed a few days before; which had been set on fire, and was burning on the ice at the time of their approach. They proved to be a she Bear and her two cubs; but the cubs were nearly as large as the dam. They ran eagerly to the fire, and drew out of the flames part of the flesh of the Walrus, that remained unconsumed, and ate it voraciously. The crew from the ship threw upon the ice great lumps of the flesh of the Sea-Horse, which they had still remaining. These the old Bear fetched away singly, laid every lump before her cubs as she brought it, and dividing it, gave to each a share, reserving but a small portion to herself. As she was fetching away the last piece, the sailors levelled their muskets at the cubs, and shot them both dead; and in her retreat

they wounded the dam, but not mortally. It would have drawn tears of pity from any but unfeeling minds, to have marked the affectionate concern expressed by this poor beast in the last moments of her expiring young-ones. Though she was herself dreadfully wounded, and could but just crawl to the place where they lay, she carried the lump of flesh she had fetched away, as she had done others before, tore it in pieces, and laid it before them; and, when she saw that they refused to eat, she laid her paws first upon one, and then upon the other, and endeavored to raise them up: all this while it was pitiful to hear her moan. When she found she could not stir them, she went off, and when she had got to some distance, she looked back and moaned. Finding this to no purpose, she returned, and, smelling round them, began to lick their wounds. She went off a second time as before; and, having crawled a few paces, looked again behind her, and for some time stood moaning. But still her cubs not rising to follow her, she returned to them again; and, with signs of inexpressible fondness, went round, pawing them and moaning. Finding at last that they were cold and lifeless, she raised her head towards the ship, and uttered a growl of despair, which the murderers returned with a volley of musket-balls. She fell between her cubs, and died licking their wounds."

Mr. Hearne says that the males of this species are, at a certain time of the year, so much attached to their mates, that he has often seen one of them, when a female was killed, come and put his paws over her, and in this position suffer himself to be shot rather than quit her.

During the winter these animals retire and bed themselves deep in the snow, or under the fixed ice of some eminence; and here they pass, in a state of torpidity, the long and dismal Arctic night, and reappear only with the return of the sun.

The Polar Bear has a great dread of heat. An animal of this species described by Professor Pallas, would not stay in its house in the winter, although at Krasnojarsk in Siberia, where the climate is very cold; and it seemed to experience great pleasure in rolling itself on the snow. A Polar Bear that was kept in the Museum of Natural History in Paris, suffered excessively during the hot weather. The keepers, throughout the year, were obliged to throw upon it sixty or seventy pails of water a-day, to refresh it. This animal was fed only with bread, of which it daily consumed no more than about six pounds, notwithstanding which it became very fat. It is not known to what age these animals live.

White Bears are sometimes found in Iceland; but not being natives of that island, they are supposed to float thither from the opposite coast of Greenland, on some of the huge masses of ice that are detached from those shores. After so long an abstinence as they must necessarily undergo in the voyage, they are reduced by hunger to attack even men, if they should come in their way. But Mr. Horrebow informs us, that the natives are always able to escape their fury, if they can only throw in their way something to amuse them. A glove (he says) is sufficient for this purpose; for the Bear will not stir till he has

turned every finger of it inside out; and, as these animals are not very dexterous with their paws, this takes up some time, and in the mean while the person makes his escape.

HUNTER COMBATTING GRIZZLY BEAR.

Some writers have said, that the Grizzly Bear will run away if he comes across the scent of men. This, my informant, who is a practical man, strenuously denies, and states that the man is more likely to run away from the bear, than the bear from the man. The American Indians fear it so much, that a necklace of its claws, which may only be worn by the individual who destroyed the bear, is a decoration entitling the wearer to the highest honors. These formidable claws are five inches long, and cut like so many chisels, so that the Indian of former days, armed only with bow, spear, and knife, fully deserved honor, for overcoming so savage and powerful a brute. Since the introduction of fire-arms, the Grizzly Bear affords a rather easier victory, but even to one armed with all advantage of rifle and pistols, the fight is sure to be a severe one, for when the Bear is once wounded, there is no attempt to escape, but life is pitted against life. Before the hunter commences the struggle he must have considerable confidence in his presence of mind, for every one knows how the least tremor of hand or eye, causes a rifle ball to wander far from its intended path, and a ball that does not penetrate a vital part only serves to irritate the bear.

Sometimes, it is said, after a party of hunters have been combating one of these Bears, it is impossible to find four square inches of sound skin in the animal's body, a ball through the brain, or heart, appear ing to be the only safety on the part of the hunter.

When a traveller is passing through a part of the country where he is likely to fall in with these animals, he provides himself with a

HUNTER PURSUED BY GRIZZLY BEAR.

quantity of meat strongly impregnated with some perfume. If a Bear sees the traveller, and charges him, he throws down a small piece of his prepared meat. The bear stops and snuffs at it, and is dubious about it for some time, but at last finishes by eating it. During the time in which he is undecided, the traveller has gained considerable ground, and by a repetition of the same ruse, either tires the Bear out, or meets with a sufficient body of friends to render him independent of the animal.

It is rather singular that this Bear has the power of moving each claw separately, as we move our fingers. It is able to overcome and carry off the enormous Bison, and to dig a pit in which to bury it.

THE GLUTTON

The length of the Glutton is three feet; exclusive of the tail, which measures about one foot. The top of the head, and the whole of the back, as well as the muzzle and feet, are of a blackish brown color. The sides are dusky, and the tail is the color of the body.

The most remarkable circumstance relative to the economy of these animals, is the stratagem which they adopt for the purpose of alluring and seizing upon their prey. We are informed that they climb into trees in the neighborhood of herds of deer, and carry along with them a considerable quantity of a kind of moss to which the deer are partial. As soon as any of the herd happens to approach the tree,

GLUTTON WAITING FOR DEER.

the Glutton throws down the moss. If the deer stop to eat, the Glutton instantly darts upon its back; and, after fixing himself firmly between the horns, tears out its eyes: which torments the animal to such a degree, that either to end its torments, or to get rid of its cruel enemy, it strikes its head against the trees till it falls down dead. The Glutton divides the flesh of the deer into convenient portions, and conceals them in the earth for future provisions. When the voracious animal has once firmly fixed himself by the claws and teeth, it is impossible to remove him. In vain does the unfortunate stag seek for safety in flight: and if it do not kill itself, its enemy soon brings it to the ground by sucking its blood, and gradually devouring its body.

Gluttons feed also on hares, mice, birds, and even on putrid flesh; and it is absurdly asserted by the Norwegians, that they carry their voracity to such an extent, as to be obliged to relieve themselves by squeezing their over-swollen bodies between two trees. If this creature seize a carcass, even bigger than himself, he will not desist from eating so long as there is a mouthful left.

When the Glutton is attacked, he makes a stout resistance; for, with his teeth, he will tear even the stock from a gun, or break in pieces the trap in which he is caught. Notwithstanding this, he is

capable of being rendered tame, and of learning many entertaining tricks.

In a state of nature, he suffers men to approach him without exhibiting the least signs of fear, and even without any apparent wish to avoid them. This may be the effect of living in desert countries; generally out of the sight, and removed from the attacks of men.

THE GLUTTON AND DEER.

The Glutton is hunted for the sake of his skin, which is very valuable. The Kamtschadales so much esteem it, that they say the heavenly beings wear garments made of no other fur than this; and they would describe a man as most richly attired, if he had on the skin of a Glutton. The women ornament their hair with the white paws of this animal, which they esteem an elegant addition to their dress.

Gluttons are found in all the countries bordering upon the northern ocean. They are also natives of various parts of Canada, and of the country around Hudson's Bay.

THE WOLVERINE.

The Wolverine resembles the Wolf in size, and the Glutton in the figure of its head. Both the upper and under parts of the body are of a reddish brown color: the sides are yellowish brown; and a band of this color crosses the back near the tail, which is long and of a chesnut color. The face is black. The legs are strong, thick, short, and black; and the soles of the feet are covered with hair.

These animals are not uncommon in the northern regions of America.

The pace of this animal is very slow; but their sagacity, strength, and acute scent, make to them ample amends for this defect. They burrow in the ground; and are said to be extremely fierce and savage. They are also possessed of great courage and resolution. A Wolverine has been known to seize on a deer that an Indian had killed; and though the Indian advanced within twenty yards, he still refused to abandon his capture, and even suffered himself to be shot upon the body of the fallen animal. Wolverines have also been known to take a deer from a wolf, before the latter had time to begin

WOLVERINE ATTACKING DEER.

his repast after killing it. Indeed their amazing strength, and the length and sharpness of their claws, render them capable of making a formidable resistance against every animal of their own country.

As a proof of their surprising strength, it is related that, some years ago, there was a Wolverine at Churchill, on Hudson's Bay, that overset the greater part of a pile of wood which measured upwards of seventy yards round, and contained a whole winter's firing: this he did, to get at some provisions that had been hidden there by the Company's servants, when going to the factory to spend the Christmas holidays. This animal had for several weeks, been observed lurking about the neighborhood of their tent; and had committed many depredations on the game caught in their traps and snares, and eaten many of the Foxes that had been killed by guns set for the purpose, but he was too cunning to be caught. The people thought they had

adopted an effectual mode of securing their provisions, by tying them up in bundles, and placing these on the tops of the wood pile. They did not imagine that the Wolverine would even have found out where they were; much less that he could have got at them if he had discovered them. To their astonishment, however, when they returned, they found the greater part of the pile overthrown. The wood was very much scattered about; and it was imagined, that in the animal's attempting to carry off his booty, some of the provisions had fallen down into the heart of the pile, and that rather than lose half his prize, he had been at the trouble of doing this. The bags of flour, oatmeal, and peas, though of no use to him, he had torn to pieces, and their contents were found scattered about on the snow; but every bit of animal food, consisting of beef, pork, bacon, venison, salted geese, and partridges, he had either eaten or carried away.

THE RACCOON.

THE RACCOON.

The color of this animal is grey; and its head is shaped somewhat like that of a Fox. The face is white; and the eyes, which are large, are surrounded by a black band, from which a dusky stripe runs along the nose. The tail is very bushy, and is annulated with black. The back is somewhat arched; and the fore-legs are shorter than the others. The length of the Raccoon is about two feet, from the nose to the tail; and the tail is about a foot long.

The Raccoon is a native of North America, and of several of the West India islands, where it inhabits the hollows of trees. Its food consists principally of maize, sugar-canes, and various kinds of fruit. It is also supposed to devour birds, and their eggs. When near the shores, these animals live much on shell-fish, and particularly on oysters. We are told that they will watch the opening of the shell, dexterously put in their paw, and tear out the contents; sometimes, however, the oyster suddenly closes, catches the thief, and detains him till he is drowned by the return of the tide. They feed likewise on crabs, in the taking of which they exhibit much cunning. Brickell, who relates these circumstances, says, that the Raccoon will stand by the side of a swamp, and hang its tail into the water; that the Crabs, mistaking this for food, lay hold of it, and as soon as the beast feels them pinch, he pulls them out with a sudden jerk, and devours them. A species of Land-Crab, found in holes of the sand in North Carolina, are frequently the food of the Raccoon. He catches them by putting one of his fore-paws into the ground, and hauling them out.

The Raccoon is an active and sprightly animal, but has a singularly oblique gait in walking. His sharp claws enable him to climb trees with great facility, and he ventures to run even to the extremities of the branches. He is easily tamed, and is then good-natured and sportive; but is almost constantly in motion, and is as mischievous as a monkey. He sits upright to eat, and carries food to his mouth in his paws. He feeds chiefly by night, and sleeps during the greatest part of the day.

RACCOON IN A TREE.

M. Blanquart des Salines had a Raccoon, of which he gave to M. de Buffon the following particulars:—Before it came into his possession it had always been chained. In this state of captivity it was very gentle, but exhibited little attachment to any one. The chain of this Raccoon was sometimes broken, and on such occasions liberty rendered him insolent. He took possession of an apartment, which he would allow none to enter; and it was with some difficulty that he could again be reconciled to bondage. When permitted to be loosed from confinement, however, he would express his gratitude by a thousand caressing gambols. But this was by no means the case when he effected his own escape. He would then roam about, sometimes for three or four days together, upon the roofs of the neighboring houses; descend during the night, into the court-yards; enter the hen-roosts, strangle all the poultry, and eat only their heads. His chain rendered him more circumspect, but by no means less cruel. When he was in confinement, he employed every artifice to make the fowls grow familiar with him: he permitted them to partake of his victuals; and it was only after having inspired them with the greatest notions of security, that he would occasionally venture to seize one of them, and tear it in pieces. Some young Cats met with a similar fate.

He used to open oysters with wonderful dexterity. His sense of touch was exquisite; for, in all his operations, he seldom used either his nose or his eye. He would pass an oyster under his hind paws; then, without looking at it, search with his fore paws for the weakest part; there, sinking his claws, he would separate the shells, and leave not a vestige of the fish. Whatever dry food he ate, he used (as indeed the whole species do) to soften, or rather dilute, in water, by immersing it in the vessel that contained the water given for him to drink.

He was extremely sensible of ill-treatment. A servant, one day, gave him several lashes with a whip; and the man could never afterwards accomplish a reconciliation. Neither eggs, nor fish, of which he was exceedingly fond, could appease his resentment. At the approach of this servant, he always flew into a rage; his eyes kindled, he endeavored to spring at the man, uttered the most dolorous cries, and rejected every thing that was presented to him, till the man went

away. This animal disliked children; their crying irritated him, and he made every effort to spring upon them. A small Dog of which he was fond, he chastised severely when it barked too loud.

According to Linnæus, the Raccoon has a great antipathy to hog's bristles, and is much disturbed at the sight of a brush. The female produces two young-ones at a birth, which commonly takes place about the month of May.

This animal is hunted for the sake of his fur; which is used by the hatters, and is considered as next in value to that of the Beaver: it is used also in linings for garments. The skins, when properly dressed, are made into gloves, and upper-leathers for shoes. The Negroes frequently eat the flesh of the Raccoon, and are very fond of it.

THE BADGER.

The general length of the Badger is about two feet and a half; and of the tail, six inches. Its body and legs are thick. The eyes and ears are small; and the claws of the fore-legs long and straight. This animal is of a uniform grey color above, and on the under parts entirely black. The face is white; and along each side of the head runs a black pyramidal stripe, which includes the eyes and ears. The hair is coarse, and the teeth and claws are peculiarly strong.

The Badger is not only well known in England, but is occasionally found in all the temperate parts of Europe.

Although in itself a harmless and inoffensive animal, living principally on roots, fruit, and other vegetable food, the Badger has been furnished with such weapons, that few creatures can attack it with impunity. The address and courage with which this animal defends himself against beasts of prey, have caused him to be frequently baited with Dogs, as a popular amusement. Though naturally of an indolent disposition, he now exerts the most vigorous efforts, and frequently inflicts desperate wounds on his adversaries. The skin is so thick and loose, as not only to resist the impressions of the teeth, but also to suffer him, even when within their gripe, to turn round and bite them in their most tender parts. In this manner does he resist repeated attacks, both of men and Dogs, from all quarters; till, overpowered with numbers, and enfeebled by wounds, he is at last compelled to submit.

The Badger inhabits woody places, the clefts of rocks, or burrows which he forms under the ground. He is a very cleanly animal, and keeps his subterraneous mansion exceedingly neat. He continues in his habitation during the day, and does not make his appearance abroad till the evening. At times, from indulging in indolence and sleep, he becomes excessively fat. During the severe weather of winter he remains in a torpid state in his den, sleeping on a commodious bed formed of dried grass. Under the tail there is a receptacle, in which is secreted a white fetid substance, that constantly exudes through the orifice, and thus gives him a most unpleasant smell.

THE BADGER.

These animals are not known to do any other mischief to mankind, than by scratching and rooting up the ground, in search of food. This is always performed during the night; and from this arises one of the modes usually practised of taking them. Their den is discovered; and when they are abroad in the night, a sack is fastened at the mouth. One person remains near the hole to watch; while another beats round the fields with a Dog, in order to drive them home. As soon as the man at the hole hears that a Badger has run in for refuge, he immediately seizes the mouth of the sack, ties it, and carries it off. Sometimes these animals are caught by means of steel traps, placed in their haunts.

They live in pairs; and produce, in the spring of the year, four or five young-ones. If caught before they are grown up, they may be tamed. The skin of the Badger, dressed with the hair on, is used for various purposes; and the hairs are made into brushes for painters. The flesh when the animals are well fed, makes excellent hams and bacon

THE COATI-MONDI.

THE COATI-MONDI.

The peculiarly long snout of the COATIS distinguishes them at once from the Raccoons, which they resemble in some other respects. Their snout is very movable, and it is of great use to them in routing out the worms and insects which they dig up. The nostrils are placed on a sort of disk at the end of the snout, and give the whole head a most extraordinary aspect. The Coatis live upon birds, eggs, insects, and worms, and sometimes they will eat roots. They are nocturnal in their habits, spending most of the day in sleep, rolled up in a ball. In descending a tree they walk with their heads downward, like the Cat, which, however, they surpass in activity. These animals inhabit the warmer parts of America, but do not appear to be much sought after by hunters. The Brown Coati-mondi is the species represented in the engraving; there is another species, the Red Coati.

COATI-MONDI CATCHING A BIRD.

THE KINKAJOU.

The Kinkajou is also an inhabitant of South America. It is not unlike the Coati in its habits, but is more active, as it possesses a prehensile tail, which it uses in the same way that the Spider Monkeys use theirs. The tongue of the Kinkajou is capable of being inserted into crevices, and drawing out any insects that may be lying concealed beyond the reach of its paws. The Spanish missionaries give it the name of Honey Bear, because it is a great devastator of the nests of the Wild Bee, using its long tongue to lick the honey out of the cells. When in captivity it is very tame and gentle, and will play with an acquaintance as a Cat will. It displays great address in capturing Flies and other insects with its tongue, and it is amusing to watch how its eyes gleam directly that a fly settles within its reach. During the earlier part of the day it will not move, but towards dusk it becomes very brisk and animated, climbing about its cage, and swinging from the top bars by its tail and hind paws.

THE KINKAJOU.

OF THE OPOSSUMS IN GENERAL

THESE animals are furnished with an external abdominal pouch They have ten front teeth in the upper, and eight in the lower jaw. of the former of these the two middle ones are the longest, but of the latter the middle ones are broader and very short. The canine-teeth are long, and the grinders indented. The tongue is somewhat rough.

THE OPOSSUM.

We now come to a race of quadrupeds, so singular in their conformation, and so extraordinary in their habits, as, at their first discovery, to have excited the general surprise and admiration of mankind. The females of most of the species are furnished with abdominal pouches, for the protection and preservation of their offspring. Hence they are called Marsupial animals. In some of these there are two, in others three, distinct cavities, which can be shut or opened at pleasure. In these pouches the young-ones remain, hanging to the nipples, till they are large enough to run about and provide food for themselves. The Opossums are animals principally confined to the New Continent, and only one species has yet been discovered as a native of Europe.

THE VIRGINIAN OPOSSUM.

The Virginian Opossum is about the size of a small Cat: from the upright growth of its fur, however, it appears to be much thicker. Its general color is dingy white. The head is long and sharpened, and the mouth wide. The tail is about a foot long; prehensile; hairy at its origin, but afterwards covered with a scaly skin, which gives it somewhat the appearance of a Snake. The legs are short, and blackish; and all the

VIRGINIA OPOSSUM WITH A BIRD.

toes (except the interior ones, which are flat and rounded, with nails like those of the Monkey tribe) are armed with sharp claws.

From the formation of the feet of these animals, which, in some respects, are like those of the Monkeys, it is evident that their motions, on the ground, must be constrained and awkward. In recompense, however, for this apparent defect, they are able to ascend trees with wonderful agility. Here, by the help of their tail, which is so muscular and flexile as to admit of being coiled round the branches, they are more active than most other quadrupeds. Sometimes they will continue for a considerable while together with their bodies suspended, and on watch for prey. At other times, like Monkeys and Squirrels, they will leap from tree to tree, in pursuit of food, or to escape from their enemies.

If an Opossum be pursued and overtaken, it will feign itself dead till the danger is over; and, says M. du Pratz, it will not, when seized in this condition, exhibit signs of life, though even placed on a red-hot iron; and when there are any young-ones in the pouch of a female, she will suffer both herself and them to be roasted alive rather than she will give them up. These creatures never move till their assailant is either gone to a distance, or has concealed himself; on which they endeavor to scramble, with as much expedition as possible, into some hole or bush. They are so very tenacious of life, that, in North Carolina, there is a well-known adage, "If a Cat has nine lives, the Opossum has nineteen."

Although, says M. de Buffon, these animals are carnivorous, and even greedy of blood, which they suck with avidity, they also feed upon reptiles, insects, sugar-canes, potatoes, roots, and the leaves and the bark of trees. Being neither wild nor ferocious, they are easily tamed; and, in a domestic state, are by no means nice in regard to their food. Their smell is offensive, somewhat resembling that of a Fox. When two or more Opossums are kept in the same place, they almost continually employ themselves in licking each other; and whenever they are fondled by any person, they make a purring noise, not unlike that of a Cat.

VIRGINIAN OPOSSUM CATCHING A LIZARD.

In a wild state, when the female is about to litter, she chooses a place in the thick bushes, at the foot of some tree. Assisted by the male, she there collects together a quantity of fine, dry grass; this

is loaded upon her belly, and the male drags her and her burden to the nest, by her tail. She produces from four to six young-ones at a time. As soon as these come into the world, they retreat into her pouch or false belly, blind, naked, and exactly resembling little fœtuses; and fasten themselves to the teats. Some travellers assert, that, at this period of their existence, they are not bigger than a large fly; a fact, says M. de Buffon, not so much exaggerated as might be imagined, since he had himself seen in an animal of a species resembling the Opossum, young-ones sticking to the teats that were not larger than beans. They fasten themselves as closely to the teats as if they grew there; and they continue to adhere, apparently inanimate, till they arrive at some degree of perfection in shape, and obtain their sight, strength, and hair; after which they undergo a sort of second birth. From that time they use the pouch merely as an asylum from danger. The mother carries them about with the utmost affection, and they may frequently be seen sporting in and out of this secure retreat. Whenever they are surprised, and have not time to retire into the pouch, it is said, that they will adhere to the tail of their parent, and thus still endeavor to escape with her.

The American Indians spin the hair of the Opossum, and dye it red; and then weave it into girdles, and other parts of their dress The flesh of these animals is white, and well-tasted, and is preferred by the Indians to pork: that of the young-ones eats very much like sucking-pig.

OF THE KANGAROOS IN GENERAL.

The Kangaroos have six front teeth in the upper jaw, emarginated;

and two in the lower, very large, long, and sharp, pointing forward. There are five grinders on each side in both jaws, distant from the other teeth. The fore-legs are short, and the hinder ones very long; and in the female there is an abdominal pouch, containing the teats.

In their being furnished with an abdominal pouch for the protection of their offspring, these animals are allied to the Opossums. But in other respects, both of structure and appearance, they are widely different. The tail of the Kangaroos is so strong and muscular, as occasionally to serve almost the purpose of an additional leg.

Only three species have as yet been ascertained all of which are natives of New Holland.

THE GREAT KANGAROO.

These animals have frequently been known to measure as much as nine feet in length, from the tip of the nose to the end of the tail; and to weigh a hundred and fifty pounds. They are slender about the upper parts, and gradually increase in thickness as far as the loins. The fore-legs are seldom more than about nineteen inches in length; whilst the hinder ones are sometimes three feet and a half long. The hind legs, which are perfectly bare and callous beneath, are very strong; and, when sitting erect, the animal rests on the whole of their length. The claws are only three in number; the middle one greatly exceeds the others in length and strength; but the inner one is of a peculiar structure; at first sight it appears to be single, but on further inspection it is seen to be divided down the middle, and even through the ball of the toe belonging to it.

THE GREAT KANGAROO.

It was in the year 1770 that this very singular species of quadruped was originally discovered in New Holland, by some of the persons

HUNTING THE KANGAROO ON HORSEBACK.

who accompanied Captain Cook in his first circumnavigation of the world. From the general form and structure of the Kangaroo, there can be little doubt that its chief progressive motion must be by leaps: in these exertions it has been seen to exceed twenty feet at a time, and this so often repeated as almost to elude the swiftness of the fleetest greyhound; and it is able with ease to bound over obstacles nine feet or more in height.

KANGAROO LEAPING.

Kangaroos have vast strength in their tail. This they occasionally use as a weapon of defence; for they are able to strike with it so violent a blow, as even to break a man's leg. But this is not their only weapon, for when hunted, as they sometimes are, with greyhounds, they use both their claws and teeth. On the hounds' seizing them, they turn, and catching hold with the nails of the fore-paws, strike the Dog with the claws of their hind feet, and sometimes lacerate his body in a very shocking manner.

The Kangaroo generally feeds standing on its four feet, in the manner of other quadrupeds; and it drinks by lapping. In a state of captivity,

HUNTING THE KANGAROO WITH DOGS.

it has a trick of sometimes springing forward, and kicking, in a forcible manner, with its hind-feet; during which action it rests or props itself on the base of its tail.

These animals have the singular faculty of separating, to a considerable distance, the two long fore-teeth of their upper-jaw. The female seldom produces more than one young-one at a birth: and so exceedingly diminutive is this at its first exclusion, that it scarcely exceeds an inch in length, and weighs but twenty-one grains. It is received into the abdominal pouch of the mother, though its mouth is merely a round hole, just large enough to receive the point of the nipple. The mouth, however, gradually extends with age, till it is capable of receiving the whole nipple, which then lies in a groove formed in the middle of the tongue. At this period of its growth, feeble as it is in other respects, its fore-paws are comparatively large and strong, andthe claws extremely distinct, to facilitate the motion of the little

animal during its residence in the pouch: the hind-legs, which are afterwards to become very long and stout, are now both shorter and

KANGAROO AT BAY.

smaller than the others. The young-one continues to reside in the pouch till it has nearly attained its maturity. It occasionally creeps out for exercise or amusement; and even after it has quitted this maternal retreat, it often runs into it for shelter, on the least indication of danger.

Kangaroos live in burrows under the ground, and subsist on vegetable substances, and chiefly on grass. In their native state they are said to feed in herds, thirty or forty together; and some individual of the herd is generally observed to be stationed, apparently on the watch, at a distance from the rest. They seem to be nocturnal animals. Their eyes are furnished with nictitating or winking membranes, situated at the interior angle, and capable of being extended at pleasure entirely over the ball.

HUNTING THE SMALL KANGAROO.

Several Kangaroos have been kept in England, and particularly in the royal domains at Richmond. These have produced young-ones: and we have reason to suppose that there would be little difficulty in naturalizing the species in this country.

Nearly all the quadrupeds of Australia are marsupial. We have space for only a few of them; and first,

THE WOMBAT.

The Wombat is a sluggish animal, burrowing under ground and sleeping in the day time. At night it seeks its food, which consists entirely of vegetable matter. Its flesh is said to be palatable; and it is easily domesticated.

THE WOMBAT.

THE DASYURUS.

The Dasyurus, says a French writer, is the Fox of Australia. He is carnivorous and extremely voracious. It lives on birds, insects, and even reptiles. It lives in cavities of the rocks near the settlements of Australia in the daytime, and sallies forth to make dread-

DASYURUS CAUGHT IN A TRAP.

THE DASYURUS.

ful ravages on the poultry yards. There are several species of Dasyurus, one of which is not larger than a Rat.

THE ECHIDNA.

THE ECHIDNA.

Externally the Echidna resembles a Hedge-hog. The Australians call him the Spring Hog. His long tongue, used in catching Flies and other insects, reminds us of the Ant-eater. His strong nails are used in burrowing in the ground.

THE SOOTY TAPOA.

The Sooty Tapoa is another specimen of the marsupial animals of Australia. He has a prehensile tail, like the Opossum, and lives chiefly in trees, seeking his prey by night. Its food is chiefly vegetable; and its flesh, like that of the Kangaroo, is considered excellent eating. It remains at rest in the day-time, and its period of activity is in the night.

THE YAPAK.

The Yapak is marsupial. It is a sort of South American Otter. Its body is a foot in length. It lives near the water, and feeds on fish. It has a long tail, scaly, like that of a Rat. Its fur, of a yellowish-grey color, is of some of value. It is found in Columbia and Central America.

THE YAPAK.

THE PHALANGER.

THE PHALANGER.

The Phalanger is a slender, awkward-looking animal of the marsupial tribe, with strong hind and small, weak fore-legs, short ears, and ash-colored fur.

OF MOLES IN GENERAL.

In the upper jaw the Moles have six unequal front teeth, and in the lower jaw eight. There is one canine-tooth on each side, in both jaws, the upper ones of which are the largest; there are also seven grinders above, and six below.

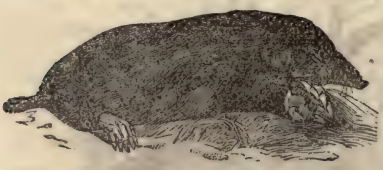
The animals of the present tribe are easily distinguished from all other quadrupeds. Their body is thick, and somewhat cylindrical; and their snout formed like that of a hog, for rooting in the ground in search of worms and the larvæ or grubs of insects, their principal food. The fore-feet are strong, and well-calculated for digging those subterraneous retreats in which they entirely reside. They have no external ears; and the eyes are very small and completely hidden in the fur. There are *seven* species.

THE COMMON MOLE.

The Mole is an animal so well known, that any particular description of its shape and dimensions is unnecessary.

Destined by its Creator to seek a subsistence under the surface of the ground, the fore-legs of the Mole, which are very short, and excessively strong and broad, are situated outward, and furnished with large

claws, by means of which it is enabled to work away the earth from before it with the utmost ease. Its hind-feet, which are much smaller than the others, are calculated for throwing back the mould during its subterraneous progress. The snout also is slender, strong, and tendinous; and there is no appearance of a neck. The general length of this animal is between five and six inches.



THE COMMON MOLE.

The eyes of the Mole are exceedingly small; so much so, that many persons have doubted whether they were intended for distinct vision, or only to afford the animal so much sensibility of the approach of light, as sufficiently to warn it of the danger of exposure. They have, however, been proved to contain every property that is requisite to distinct sight. The faculty of hearing is said to be possessed by the Mole in a very eminent degree; and if at any time the animal emerges from its retreat, it is by this means enabled instantly to disappear on the approach of danger.

The females, about the month of April, produce four or five young-ones; and the habitations in which these are deposited, are constructed with peculiar care and intelligence. The parent animals begin their operations by raising the earth and forming a tolerably high arch. They leave partitions, or a kind of pillars, at certain distances; beat and press the earth; interweave it with the roots of plants; and render it so hard and solid, that the water cannot penetrate the vault. They then elevate a little hillock under the principal arch; and lay upon it herbs and leaves, as a bed for their young. In this situation they are above the level of the ground, and consequently above the reach of ordinary inundations. They are at the same time defended from rain by the large vault that covers the internal hillock. This hillock is pierced on all sides with sloping holes, which descend still lower, and serve as subterraneous passages for the mother to issue from her habitation in quest of food for herself and her offspring. These by-paths are beaten and firm; they extend about twelve or fifteen paces, and issue from the principal mansion like rays from a centre.

In summer, the Mole descends to low and flat land; and generally makes choice of meadows for the place of its residence, because there it finds the earth fresh and soft to dig through. If the weather continues long dry, it repairs to the borders of ditches, the banks of rivers and streams, and places contiguous to hedges.

This animal seldom forms its gallery more than five or six inches under the surface. In the act of doing this, it scrapes the earth before it on one side, till the quantity becomes too great for it to labor onward with ease. It then works towards the surface, and by pushing with its head, and scratching with its nervous paws, gradually raises the mould, and thus produces those small hillocks so common in our fields. After getting rid of the earth in this manner, it proceeds forward, and continues its labor as before; and a person may easily discover how many Moles are contained in a certain space of ground, by counting

the newly-raised Mole-hills, which have no communication with each other.

Moles, like Beavers and some other quadrupeds, live in pairs; and so lively and reciprocal an attachment subsists between them, that they seem to disrelish all other society. In their dark abodes, they enjoy the placid habits of repose and of solitude; they also have the art of securing themselves from injury, of almost instantaneously making an asylum or habitation, and of obtaining a plentiful subsistence.

The operations of the Mole are chiefly to be observed in grounds where the soil is loose and soft. During the summer-time, these animals run in search of food in the night among the grass; and thus frequently become the prey of Owls. They exhibit much art in the skinning of Worms; this they always do before they eat them; stripping off the skin from end to end, and squeezing out all the contents of the body.

When Moles are first caught, either by digging or otherwise, they utter a shrill scream, and prepare for defence by exerting the strength of their claws and teeth. They are said to be very ferocious animals; and sometimes to tear and eat one another. In a glass case, in which a Mole, a Toad, and a Viper were enclosed, the Mole has been known to dispatch the other two, and to devour a great part of each.

The following is a remarkable instance of the exertions which a Mole is able to make in crossing even broad waters: "On visiting the Loch of Clunie, (says Arther Bruce, Esq., in the Linnean Transactions,) I observed in it a small island at the distance of one hundred and eighty yards from the nearest land, measured to be so upon the ice. Upon this island, Lord Airly, the proprietor, has a castle and a small shrubbery. I remarked frequently the appearance of fresh mole-casts or hills. I for some time took them for those of the Water-Mouse; and one day asked the gardener if it was so. No, he said, it was the Mole; and that he had caught one or two lately. Five or six years ago he caught two in traps; and for two years after this he had observed none. But about four years ago, coming ashore one summer's evening in the dusk he and another person (Lord Airly's butler) saw at a short distance, upon the smooth water, some animal paddling to the island. They soon closed with this feeble passenger; and found it to be a Mole that had been led by a most astonishing instinct, from the nearest point of land, to take possession of this desert island."

People in general are not aware of the great mischief that is occasioned in fields and gardens by these animals. We are informed by M. de Buffon, that, in the year 1740, he planted about sixteen acres of land with acorns, the greater part of which were in a short time carried away by the Moles to their subterraneous retreats. In many of these were found half a bushel of acorns, and in some even a bushel. M. de Buffon, after this, caused a great number of iron traps to be constructed; and by these, in less than three weeks, he caught 1300 Moles. To this instance of devastation we may add that, in the year 1742, Moles were so numerous in some parts of Holland, that one farmer caught between five and six thousand.

The following is Dr. Darwin's description of the habitations of these animals, and of the usual modes in which they are caught.—"The Moles (observes this writer) have cities underground; which consist of houses, or nests, where they breed and nurse their young. Communicating with these are wider and more frequented streets, made by the perpetual journeys of the male and female parents; as well as many other less frequented alleys or by-roads, with many diverging branches, which they daily extend, to collect food for themselves or their progeny

"These animals are most active in the vernal months, during the time of their courtship; and many burrows are at this time made in the earth, for their more easily meeting with each other. And though Moles are commonly esteemed to be blind, yet they appear to have some perception of light, even in their subterraneous habitations; because they begin their work as soon as it is light, and consequently before the warmth of the sun can be supposed to affect them. Hence one method of destroying them consists in attending to them early before sunrise. At that time the earth or the grass may frequently be seen to move over them; and, with a small, light spade, their retreat may be cut off by striking this into the ground behind them, and immediately digging them up.

"The Mole suckles four or five, and sometimes six young-ones; which are placed considerably deeper in the ground than the common runs; and the mole-hills near them are consequently larger, and generally of a different color from the others. These nests are to be dug up; having first intercepted the road between them and the mole-hills in the vicinity, to cut off the retreat of the inhabitants.

THE MOLE RAT

"The next important circumstance is, to discover which are the frequented streets, and which the by-roads; for the purpose of setting subterraneous traps. This is effected by making a mark on every new mole-hill, by a light pressure of the foot; and the next morning observing whether a Mole has again passed that way and obliterated the foot-mark. This is to be done for two or three successive mornings. These foot-marks should not be deeply impressed; lest the animal be alarmed on his

return, and thus induced to form a new branch of road rather than open the obstructed one.

"The traps are then to be set in the frequented streets, so as to fit nicely the divided canal. They consist of a hollow semi-cylinder of wood; with grooved rings at each end, in which are placed nooses of horsehair, fastened loosely by a peg in the centre, and stretched above-ground by a bent stick. When the Mole has passed half-way through one of these nooses, and removes the central peg in his progress, the bent stick rises by its elasticity, and strangles him."

The Mole Rat is a singular-looking animal, between a Mole and a Water Rat, frequenting marshy places, and burrowing in the ground, and having no external appearance of eyes.

THE STAR-NOSED MOLE.

THE STAR-NOSED MOLE.

The Star-Nosed Mole is so called from a star-shaped cartilaginous process at the extremity of the nose. It has a long bushy tail; but in other respects resembles the Common Mole. It is usually found in North America.

THE CAPE MOLE.

The Cape Mole is found in the neighborhood of the Cape of Good Hope. It resembles the Common Mole in its form and habits; but it has attracted the particular attention of naturalists by the iridiscent colors of its fur. It is like shot silk, changing from green to copper color like the neck of a Dove.

THE CAPE MOLE.

THE SHREW MOUSE.

This pretty little animal is very like the Common Mouse, but is easily distinguished from it by the length of the nose, which is used for grubbing up the earth in search of earth-worms and insects.

The reader must not imagine that the Shrew has any connection with the true Mice. It belongs to an entirely different class of animals, its teeth being sharp and pointed, not unlike those of the Mole and the Hedgehog, whereas those of the Mouse are broad and chisel-shape like the teeth of the Rabbit.

A peculiar scent is diffused from these animals, which is possibly the reason why the Cat will not eat them, although she will readily destroy them.

Many species of Shrews are known, inhabiting various countries. There are, besides the common species, the Oared and the Water Shrew, all three inhabiting England. The formation of their hair as seen under a powerful microscope, is very beautiful, but quite distinct from the hair of the Mouse or Rat. In the autumn, numbers of these little animals may be seen lying dead, but what causes this destruction is not known.

This is one of the numerous animals that have suffered by false reports, and have been treated with great cruelty on account of those fables. Rustics formerly believed that the poor little harmless creature paralyzed their cattle by running over them, and that the only way to cure the diseased animal was to place a bough of shrew-ash on the injured part. The shrew-ash was made by boring a hole into an ash-tree, and then plugging up in the hole a living Shrew Mouse. By the same process of reasoning a Shrew cut in half, and placed on a wound supposed to be caused by its bite, was considered a certain remedy.

THE WATER SHREW.

The Water Shrew frequents brooks and clear running ditches, in the banks of which it lives. It swims and dives with great ease, and when under water appears as if it had been speckled over its entire surface with silver, from the bubbles of air which adhere to its fur. It eats the grubs of various aquatic insects, digging them out of the muddy banks with its snout. It is not very common, but I have seen numbers of them inhabiting a brook near Little Hinton in Wiltshire, and often watched their elegant movements and gambols through the water.

GROUP OF WATER SHREWS.

Its localities may be discovered by searching for its "runs," which are like those of the Common Water Rat, but much smaller.

OF URCHINS IN GENERAL.

THESE animals have two front teeth above and below; of which those in the upper jaw are distant, and those of the lower are placed near together. On each side there are canine teeth; in the upper jaw five, and in the lower three. There are also four grinders on each side, both above and below; and the body is covered on the upper parts with spines. The tail and feet are very short; and the snout is somewhat cartilaginous.

Urchins are animals usually of small size. There are seven known species. Of these, one is a native of South America, four are found in the East Indies, one in Siberia, and the other, the Common Hedgehog, is a native of Europe. They feed, for the most part, on roots, worms, and insects, which they dig out of the ground by their muzzle or snout. None of the species are carnivorous.

THE COMMON HEDGEHOG.

The usual residence of these animals, which are natives of most of the temperate parts both of Europe and Asia, is in the hedge-rows or thickets. During the day-time they lie concealed in their holes, and at night wander about in search of food, which consists chiefly of fallen fruit, roots, and insects. Naturalists have alleged that they enter gardens; where they mount trees, and descend with pears, apples, or plums, stuck upon their spines. This, however, is a mistake; for, when kept in a garden, they never attempt to climb trees; nor even to stick fallen fruit upon their spines. They also are undeservedly reproached with sucking cattle and injuring their udders; for the smallness of their mouths renders this altogether impossible.

THE COMMON HEDGEHOG.

The habits of these animals are, in many respects, interesting. In the month of June, 1782, says a correspondent in the Gentleman's Magazine, a full-grown Hedgehog was put into a small yard, in which was a border of shrubs and annuals. In the course of a few days he formed, beneath a small holly-tree, a hole in the earth, sufficiently large to receive his body. After a while a small shed was built for him, in the corner of the yard, and filled with straw; but the animal would not quit his former habitation until it was covered with a stone. He then took possession of the shed, and, every morning, carried

leaves from a distant part of the border to stop its mouth. His principal food was raw meat and mice. Of the latter he would eat six at a time, but never more; and, although these were thrown to him dead, he bit them all on the neck, before he began to eat any. He would also eat snails with their shells; but would leave any thing for milk, which he lapped exceedingly slow. To this, even if set six, or eight yards distant from his shed, he would almost always come out half an hour before his usual time. If the person who usually fed him, neglected to do so he would follow him along the yard; and, if the door was open, he would even go into the house. If meat was put near the mouth of his shed, in the day-time, he would sometimes pull it in and eat it. As the weather became colder, he carried more leaves into his shed; and sometimes he would not come out for two or three days successively. About the end of November he died; from want of food, as was supposed, but, most probably, from the severity of the weather.

Mr. White observed, that the manner in which the Hedgehogs ate the roots of the plantain in his grass walks was very curious. With their upper jaw, which is much longer than the lower, they bored under the plant; and gnawed the root off upwards, leaving the tuft of leaves untouched. In this respect they were serviceable, as they thus destroyed a troublesome weed; but they in some measure defaced the walks, by digging in them small round holes.

The Hedgehog has a very uncommon mode of defending itself from the attacks of other animals. Being possessed of little strength or agility, he neither attempts to fly from, nor to assail his enemies; but erects his spines, and rolls himself up like a ball, exposing no part of his body that is not covered with these sharp weapons. He will not unfold himself unless thrown into water: and the more he is frightened or harassed, the closer he shuts himself up. While in this state, most dogs, instead of biting him, stand off and bark, not daring to seize him; and, if they attempt it once, their mouths are so pricked with his spines, that it is with difficulty they can be prevailed upon to do it a second time. He is easily taken; for he neither attempts to escape, nor to defend himself by any other means than this.

This animal, which may, in some degree, be rendered domestic, has been frequently introduced into houses, for the purpose of destroying those troublesome insects, the cock-roaches and beetles, which it pursues and devours with great avidity.

A gentleman, whose kitchen in London was infested with black-beetles, was recommended to put a Hedgehog in it. He, consequently, had one brought there which had been caught in his garden in the country. At first it was, he says, very sulky, and continued folded up; but, after a while, hunger compelled it to open itself, in search of food; and it ate very heartily of apples and bread soaked in milk: it also sucked with great eagerness, the milk out of its platter. In a little time it became so far domesticated as not to fear either cats or dogs: and even to take its food out of the hand of any one who offered it. This animal was usually kept in an upright basket, and,

when the family were going to bed, it was customary to bring out the basket and put it into the kitchen. The Hedgehog then crawled up the side; and having by that means, tipped it down, he crawled out, and began sharply to look around for his soaked bread and pan of milk. Having tasted this with great apparent delight, he used, immediately, to run under a closet-door in the kitchen, which he chose as a place of retreat. Finding all safe, he returned and retreated many times, until he had finished his supper. He was, in like manner, supplied in the day-time, and, in similar manner, would throw down his basket and wander about for food. If, at night, there was much talking; if the candles were put too near, or if he perceived himself to be closely observed, he ran to his lurking-place, until the lights were removed and the room became quiet. This Hedgehog continued, for a long time in perfect health; and he grew so fat that, after a little while, it was with difficulty he could squeeze himself under the closet-door. By his good services he well merited his board and lodging, for scarcely one beetle was left in the house; and it is supposed that he also destroyed the mice.

In the year 1799, there was a Hedgehog in the possession of a Mr. Sample of the Angel Inn at Felton, in Northumberland, which performed the duty of a turn-spit, as well, in every respect, as the dog of that denomination. It ran about the house as familiarly as any other domestic quadruped, and displayed an obedience till then unknown in this species of animals.

At the commencement of winter the Hedgehog wraps itself up in a warm nest of moss, dried grass, and leaves; and sleeps out the rigors of that season. It is frequently found so completely encircled with herbage, that it resembles a ball of dried leaves; but when taken out, and placed before a fire, it soon recovers, from its torpidity. The female produces four or five young-ones at a birth; which are soon covered with prickles, like those of the parent animal. The nest formed for the young ones is large, and is composed principally of moss.

The Hedgehog is occasionally an article of food, and is said to be very delicate eating. The skin was used by the ancients for the purpose of a clothes-brush.

CLIRES.

In this order the animals are furnished with two remarkably large and long front teeth in each jaw: but have no canine teeth. Their feet have claws, and are formed both for bounding and running.

OF THE PORCUPINES IN GENERAL.

The Porcupines have two front teeth, cut obliquely, in each jaw; and eight grinders. They have four toes on the fore, and five on the hinder feet; and the body is covered with spines intermixed with hair.

To superficial observers, the animals belonging to this tribe would seem entitled to a place with the Hedgehogs; but they have no further similitude to these, than in the spiny covering of their bodies. None of the species are supposed to be carniverous.

THE COMMON PORCUPINE.

The general length of the Porcupine is about two feet from the head to the extremity of the tail. The upper parts of the body are covered with strong spines, each of which is variegated with black and white rings. The head, belly, and legs are covered with strong dusky bristles, intermixed with softer hairs: on the top of the head, these are very long, and curved backward, somewhat like a crest.

THE COMMON PORCUPINE.

The strong and sharp spines with which the upper parts of the body of the Porcupine are covered, and which measure from nine to fifteen inches in length, are complete quills, and want only the vane to constitute real feathers. The animal has the power of elevating or depressing them at will; and when he walks they make a rattling noise by striking against each other.

Whenever these animals are irritated or offended, they stamp forcibly

on the ground with their hind feet, somewhat in the manner of Rabbits. In this act they shake all their quills, but more particularly those about the tail; and at the same time they exert their voice, which is a kind of grunting noise.

It has been asserted by credulous travellers, that Porcupines, when provoked, dart their quills at the object of their rage. This opinion, however, has been fully refuted by many accurate naturalists, who have taken pains to inquire into the matter. The usual method of defence adopted by these animals, is to recline on one side; and, at the approach of their enemy, to rise up quickly and gore him with the erected prickles of the opposite side. It is also stated, that, when the Porcupine meets with Serpents, against which he carries on a perpetual war, he closes himself up like a ball, concealing his head and feet, and then rolls upon and kills them with his bristles, without running any risk of being wounded himself. M. Le Vaillant says, that, owing to some pernicious quality in the quills, one of his Hottentots, who had received a wound in the leg from a Porcupine, was ill for upwards of six months. He also informs us that a gentleman at the Cape of Good Hope, in teasing one of these animals, received a wound in the leg, which nearly occasioned the loss of his limb; and notwithstanding every possible care, he suffered severly from it for more than four months, during one of which he was confined to his bed. When the Porcupine casts its quills, it sometimes shakes them off with so much force, that they fly to the distance of a few yards, and even bend their points against any hard substance they happen to strike. It may have been this circumstance which gave rise to the report of the Porcupine darting its quills against an enemy.

This animal is a native of Africa, India, and the Indian Islands; and is said sometimes to be found even in Italy and Sicily and Brazil. It inhabits subterraneous retreats, which it forms into several compartments; leaving two holes, one for an entrance, and the other, in case of necessity to retreat by. It sleeps during the day, and makes its excursions for food (which consists principally of fruits, roots, and vegetables) in the night. Although able to support hunger for a great length of time, and apparently without inconvenience, it always eats with a voracious appetite. In the gardens near the Cape of Good Hope, these creatures do much damage. When they have once made a path through a fence, they always enter by the same path, so long as it continues open; and this gives the inhabitants an opportunity of destroying them. When a breach is discovered, they place a loaded gun in such a manner that the muzzle will be near the animal's breast, when he is devouring a carrot or turnip that is connected by a string with the trigger.

In its manners the Porcupine is harmless and inoffensive. It is never the aggressor, and, when pursued, it climbs the first tree it can reach, where it remains till the patience of its adversary is exhausted. If, however, it be roused to self-defence, even the Lion dares not venture to attack it.

In confinement, none of these animals appear to have any particular attachment to their keeper. They will eat bread or roots out of

his hand, or suffer him to lead them about by a string fastened to their collar. One that was exhibited in the Tower of London some years ago, would even allow its keeper to take it up under his arm; but to do this without wounding himself with its spines, required considerable dexterity, since it was first necessary to close these to the animal's body, by sweeping his arm along the direction in which they grew.

THE BRAZILIAN PORCUPINE.

Porcupines usually sleep in the day-time, and become awake and active towards evening. Their teeth are peculiarly sharp and strong; and they gnaw the wood-work of their dens so much, that if there was not much iron about the sides and corners, they would soon escape. M. Bosman, when on the coast of Guinea, put a Porcupine into a strong tub, in order to secure him; but, in the course of one night, he ate his way through the staves, even in a place where they were considerably bent outward, and escaped.

The late Sir Ashton Lever had a live Porcupine, which he frequently turned out on the grass behind his house, to play with a tame hunting Leopard and a large Newfoundland Dog. As soon as they were let loose, the Leopard and Dog began to pursue the Porcupine, which always at first endeavored to escape by flight; but, on finding that ineffectual, he would thrust his head into some corner, making a snorting noise, and erecting his spines. With these his pursuers pricked their noses, till they quarrelled between themselves, and thus gave him an opportunity to escape.

The period of gestation in the female is about seven months, at the end of which time she produces one or two young-ones at a birth, which she suckles about a month. These she defends with the utmost resolution against all assailants, and she will rather be killed than suffer herself to be deprived of them.

In the stomach of the Porcupine, bezoar stones are frequently found. These are composed of hair, which has concreted with the juices of the stomach: they have one layer over another, so that they consist of several rings of different colors. Professor Thunberg says, he has seen them as large as a hen's egg.

The quills of the Porcupine are used by the Indians to adorn many curious articles of dress and furniture; the neatness and elegance of which would not disgrace more enlightened artists. These people dye them of various beautiful colors, cut them into slips, and embroider with them their baskets, belts, &c., in a great variety of ornamental figures. The flesh is frequently eaten by the inhabitants of the Cape of Good Hope.

THE AGOUTI.

The AGOUTI lives in Brazil, Guiana and Paraguay. It is about the size of a Rabbit, and like that animal is generally found in company

with others. In Brazil and Guiana, the Agouti is much sought after for the sake of its flesh, but it appears that in Paraguay the flesh is not eaten. When pursued, it runs for a short time with much rapidity but soon endeavors to conceal itself in a hole or under the roots of a tree, when it will suffer itself to be captured without any resistance, merely uttering a plaintive cry. It feeds on vegetables, especially yams and tubers, but in the West India Islands it devours the sugar-canes, and is a great pest to the planters.

THE AGOUTI.

THE BLACK AGOUTI.

THE BLACK AGOUTI.

The Black Agouti is smaller than the Common Agouti, being about the size of a Rabbit. It is found in Surinam, Guiana and Brazil. Its general appearance and habits are similar to those of the Common Agouti.

THE PACA.

The Paca is a short thickset animal, with thick legs, short neck, heavy head, rounded body, clumsy joints, but prompt and sudden in its motions. The upper lip is divided and the mouth is furnished with cheek pouches. It is found in Brazil, Cayenne, Guiana and Surinam.

THE PACA.

THE CAPYBARA, OR CHIGUIRA.

The CAPYBARA or CHIGUIRA is the largest of all the Rodentia. At first sight it looks very like a Pig, and its skin is covered thinly with hairs like bristles, which add to the resemblance.

It inhabits the borders of lakes and rivers in many parts of Southern America. During the day, it hides among the thick herbage of the

banks, only wandering forth to feed at night, but when alarmed, it instantly makes for the water, and escapes by diving. It is hunted for the sake of its flesh, which is said to be remarkably good. The Jaguar appears to be of the same opinion, for he is the most terrible enemy of this creature, destroying immense numbers. The food of the Capybara consists of grass, vegetables and fruits. Its length is about three feet six inches.

THE CAPYBARA.

OF THE CAVY TRIBE.

THE Cavies have, in each jaw, two wedge-shaped front teeth, and eight grinders. They have likewise four or five toes on the fore feet, and from three to five on the hinder feet. The tail is either very short, or altogether wanting; and they have no collar-bones.

These animals seem to hold a middle place between the murine quadrupeds and the Hares. Nearly all the species, which are seven in number, have a slow, and some of them a leaping pace. Their habitations are burrows, which they form beneath the roots of trees, or in the ground. They live entirely on vegetable food, and are all natives of America: two or three of the species, however, are found also on the Old Continent.

THE GUINEA-PIG, OR RESTLESS CAVY.

There are few foreign quadrupeds more generally known than this. It is a native of Brazil and of some other parts of South America, but is supposed to have originally been imported from Guinea into England. In a state of domestication it feeds on bread or grain, fruit and vegetables; but it has a decided preference for parsley. This little creature is easily rendered tame, and is very cleanly and harmless. In its disposition it is timid; and it appears totally void of attachment, not only to its benefactors, but even towards its own offspring: these it will suffer to be taken away, and even devoured, without discovering the least concern, or attempting any resistance.

THE GUINEA-PIG.

When kept in a room, it seldom crosses the floor, but generally creeps round by the wall. Its motions are, in a great measure, similar to those of the Rabbit: it strokes its head with its fore feet, and sits on its hind legs, like that animal. The male usually compels the female to go before him, and follows exactly in her footsteps. These

animals are fond of dark and intricate retreats, and seldom venture out if danger be near. When about to quit their hiding-places, they spring forward to the entrance, stop to listen, and look round; and if the road be clear, they sally forth in search of food; but on the least alarm they run instantly back again.

In their habits they are so exceedingly clean, that if their young-ones happen to be dirtied, the female takes such a dislike to them, as never again to suffer them to approach her. Guinea-pigs may frequently be observed in the act of smoothing and dressing their fur, somewhat in the manner of a Cat. The principal employment of the male and female seems to consist in smoothing each other's hair; after this office has been mutally performed, they turn their attention to their young-ones, whose hair they take particular care to keep unruffled and even; and they bite them whenever they are in the least refractory.

They repose flat on their belly; and, like the Dog, turn several times round before they lie down. They sleep with their eyes half open, and are very watchful. It is observed that the male and female seldom sleep at the same time, but seem alternately to watch each other. They are exceedingly delicate, and impatient of cold or moisture. Their usual voice is a kind of grunting, like that of a young Pig; but their notes of pain are shrill and piercing.

Their manner of fighting is singular. One of them seizes the neck of its antagonist with its teeth, and attempts to tear the hair from it. In the mean time, the other turns his posteriors to his enemy, kicks up behind like a Horse, and, by way of retaliation, scratches the sides of his opponent with his hinder claws, in such a manner that both are frequently covered with blood.

The female goes with young about five weeks, and breeds nearly every two months. Though furnished with only two teats, she usually produces three or four, and sometimes as many as twelve young-ones, at a birth. And as these have been known to breed when only two months old, the produce of a single pair may amount to upwards of a thousand in the year.

OF THE BEAVER TRIBE.

THE Beavers have the front teeth in their upper jaw truncated, and excavated with a transverse angle; and those of the lower jaw are transverse at the tips. There are four grinders on each side. The tail is long, depressed, and scaly; and there are collar-bones in the skeleton.

Belonging to the present tribe, there are but *two* species that have hitherto been discovered, the Common and the Chili Beavers; and even of these, it seems doubtful whether the latter ought not to be arranged with the Otters.

THE COMMON BEAVER.

The general length of the Beaver is about three feet. The tail is oval, nearly a foot long, and compressed horizontally, but rising into a convexity on its upper surface: it is destitute of hair except at the base, and is marked into scaly divisions, like the skin of a fish. The hair of the Beaver is fine, smooth, glossy and of a chesnut color, varying sometimes to black; and instances have occured in which these animals have been found white, cream-colored, or spotted. The ears are short, and almost hidden in the fur.

THE BEAVER.

There is reason to suppose that this animal was once an inhabitant of Great Britain; for Giraldus Cambrensis says, that Beavers frequented the river Tievi in Cardiganshire, and that they had, from the Welsh, a name signifying "the Broad-tailed animals." Their skins were valued by the Welsh laws, in the tenth century, at the enormous sum of a hundred and twenty pence each; and they seem to have constituted the chief finery and luxury of those days. Beavers are at present natives of most of the northern parts of Europe and Asia, but are principally found in North America.

No other quadrupeds seem to possess so great a degree of natural sagacity as these. Yet when we consider that their history as hitherto detailed, has been principally taken from the reports of the Beaver-hunters, whose object it is, not to study the nature or manners of the animals, but merely to seize upon them as articles of commerce, and whose accounts are often in themselves contradictory it is necessary that we should not give implicit faith to every thing that has been written, even by the most respectable authors, concerning them, where these authors have not themselves witnessed the facts they relate. Captain George Cartwright, who resided fourteen years on the coast of Labrador, in order to collect the different furs of that dreary climate, saw more of the manners of the Beaver, than most other writers. To this work, therefore, and to that of M. du Pratz, who, in Lousiana, was an eye-witness to their labors, I have principally had recourse, in endeavoring to give to the reader as faithful an account as possible of the habits of life and economy of these wonderful animals.

Beavers generally live in associated communities, consisting of as

many as two or three hundred individuals; and they inhabit extensive dwellings, which they raise to the height of six or eight feet above the surface of the water. They select, if possible a large pond; in in which they raise their houses on piles, forming them either of a circular or oval shape, with arched tops, and thus giving them, on the outside, the appearance of a dome, while within they somewhat resemble an oven. The number of houses is, in general, from ten to thirty. If the animals cannot find a pond to their liking, they fix on some flat piece of ground, with a stream running through it; and in making this a suitable place for their habitations, a degree of sagacity and intelligence, of intention and memory, is exhibited, which approaches, in an extraordinary degree, to the faculties of the human race.

Their first object is, to form a dam. To do this, it is necessary that they should stop the stream, and of course that they should know in which direction the water runs. This seems a very wonderful exertion of instinct; for they always do it in the most favorable place for their purpose, and never begin at a wrong part. They drive stakes, five or six feet long, into the ground, in different rows, and interweave them with branches of trees; filling them up with clay, stones, and sand, which they ram so firmly down, that, though the dams are frequently a hundred feet long, Captain Cartwright says, he has walked over them with the greatest safety. These are ten or twelve feet thick at the base, and gradually diminish towards the top, which is seldom more than two or three feet across. They are exactly level from end to end; perpendicular towards the stream; and sloped on the outside, where grass soon grows, and renders the earth more united.

The houses are constructed with the utmost ingenuity, of earth, stones, and sticks, cemented together, and plastered in the inside with surprising neatness. The walls are about two feet thick; and the floors so much higher than the the surface of the water, as always to prevent them from being flooded. Some of the houses have only one floor; others have three. The number of Beavers in each house is from two to thirty. These sleep on the floor, which is strewed with leaves and moss; and each individual is said to have its own place. When they form a new settlement, the animals begin to build their houses in the summer; and it costs them a whole season to finish the work, and lay in their winter provisions: these consist principally of bark and the tender branches of trees, cut into certain lengths, and piled in heaps under the water.

The houses have each no more than one opening, which is under the surface of the water, and always below the thickness of the ice. By this means they are secured from the effects of frost.

The Beavers seldom quit their residence unless they are disturbed, or their provisions fail. When they have continued in the same place three or four years, they frequently erect a new house annually; but sometimes merely repair their old one. It often happens that they build a new house so close to their former dwelling, that they cut a communication from one to the other; and this may have given rise to the idea of their having several apartments.

During the summer-time, they quit their houses, and ramble about from place to place, sleeping under the covert of bushes, near the water-side. On the least noise, they betake themselves into the water for security; and they have sentinels, who, by a certain cry, give notice of the approach of danger. In the winter they never stir out except to their magazines under the water; and during that season they become excessively fat.

In one of his excursions into the northern parts of Louisiana, M. du Pratz (who resided sixteen years in that country) gives us an account of a colony of Beavers, to many of whose operations he was himself a witness. But this, in some respects, appears contradictory to the account of Captain Cartwright.

At the head of one of the rivers of Louisiana, in a very retired place, M. du Pratz found a beaver-dam. Not far from it, but hidden from the sight of the animals, he and his companions erected a hut, in order to watch the operations of these animals at leisure. They waited till the moon shone bright; and then, carrying in their hands branches of trees, in order to conceal themselves, they went with great care and silence to the dam. M. du Pratz ordered one of the men to cut as silently as possible, a gutter, about a foot wide, through it; and to retire immediately to the hiding-place.

"As soon as the water through the gutter began to make a noise (says this writer) we heard a Beaver come from one of the huts and plunge in. We saw him get upon the bank, and clearly perceived that he examined it. He then, with all his force, gave four distinct blows with his tail; when immediately the whole colony threw themselves into the water, and went to the dam. As soon as they were assembled, one of them appeared, by muttering, to issue some kind of orders; for they all instantly left the place, and went out on the banks of the pond in different directions. Those nearest to us were between our station and the dam, and therefore we could observe their operations very plainly. Some of them formed a substance resembling a kind of mortar; others carried this on their tails, which served as sledges for the purpose. I observed that they ranged themselves two and two, and that each animal of every couple loaded his fellow. They trailed the mortar, which was pretty stiff, quite to the dam, where others were stationed to take it; these put it into the gutter, and rammed it down with blows of their tails.

"The noise of the water soon ceased, and the breach was completely repaired. One of the Beavers then struck two blows with his tail; and instantly they all took to the water without any noise, and disappeared."

M. du Pratz and his companions afterwards retired to their hut to rest, and did not again disturb the animals till the next day. In the morning, however, they went to the dam, to see its construction; for which purpose it was necessary that they should cut part of it down. The depression of the water in consequence of this, together with the noise they made, roused the Beavers again. The animals seemed much agitated; and one of them, in particular, was observed several times to approach the laborers as if to examine what passed. As

M. du Pratz apprehended that they might run into the woods, if further disturbed, he advised his companions again to conceal themselves.

"One of the Beavers (continues our narrator) then ventured to go upon the breach, after having several times approached and returned like a spy. He surveyed the place, and struck four blows as he had done the preceding evening, with his tail. One of those that were going to work, passed close by me; and as I wanted a specimen to examine, I shot him. The noise of the gun made all the rest scamper off with greater speed than a hundred blows of the tail of the overseer could have done." By firing at them several times afterwards, the animals were compelled to run with precipitation into the woods. M. du Pratz then examined their habitations.

Under one of the houses he found fifteen pieces of wood, with the bark gnawed off, apparently intended for food. And, round the middle of this house, which formed a passage for the Beavers to go in and out at, he observed no fewer than fifteen different cells.

Beavers produce their young-ones towards the end of June; and generally have two at a time. These continue with their parents till they are three years old, when they pair off, and form houses for themselves. If, however, they are undisturbed, and have plenty of provisions, they remain with the old ones, and thus form a double society.

Instances have occurred of Beavers having been domesticated. Major Roderfort, of New York, related to Professor Kalm, that, for a year and a half, he had in his house a tame Beaver, which was suffered to run about like a Dog. The Major gave him bread, and sometimes fish, of which he was very greedy. As much water was put into a bowl as he wanted. All the rags and soft things he could lay hold of, he dragged into the corner where he was accustomed to sleep, and made a bed of them. The Cat in the house, having Kittens, took possession of his bed; and he did not attempt to interrupt her. When the Cat went out, the Beaver often took one of the Kittens between his paws, and held it to his breast to warm it, and seemed to dote upon it; as soon as the Cat returned, he always restored to her the Kitten. Sometimes he grumbled; but never attempted to bite.

THE BEAVER.

In the year 1820, there were in the upper room at Exeter 'Change, London, two Beavers, which had been there some time. They were very tame, and would suffer themselves to be handled by the visitors; but most persons were alarmed, on approaching them, by the animals uttering their weak and plaintive cry. This noise they also frequently emitted during their play with each other. At times they were exceedingly gay and frolicsome, wrestling and playing with each other, as far as the limits of their small apartment would admit. They often

sat upright to look about them, or to eat: and, if any thing movable was given them to play with, they would drag it about, and seem highly pleased with it. They were in no instance observed to drag any thing about on their tails, or to make any attempts to do so. In all their manners these animals were extremely cleanly. They were fed with the bark of trees, and on bread; and such was their propensity to gnaw wood, that it was not considered safe, notwithstanding the natural gentleness of their disposition, to allow them the full range of a room, for they would soon have eaten their way out, and escaped.

The skin of the Beaver has hair of two kinds: that immediately next to the skin, is short, implicated together, and as fine as down: the upper hair grows more sparingly, and is both thicker and longer. The former is of little value; but the flix or down is wrought into hats, stockings, caps, and other articles of dress.

The skins of Beavers form a considerable article of traffic, both with the northern countries of Europe and with America. About fifty-four thousand have been sold by the Hudson's Bay Company at one sale: and in the year 1798, one hundred and six thousand skins were collected in Canada, and sent into Europe and China. Those of a black color are preferred, particularly such as are taken during winter.

The medicinal substance called *castor* is produced in what are called the inguinal glands of these animals; and each individual, both male and female, has usually about two ounces. That produced by the Russian Beavers is more valuable, and sells at a much higher price than what is imported from America. The flesh is good eating.

It frequently happens that single Beavers live separately from the general community, in holes, which they make in the banks of rivers, considerably under the surface of the water, working their way upward to the height of many feet. These are called by the Hunters *Hermits* or *Terrier Beavers.* Like the rest, they lay up a store of provisions for the winter. It is supposed by Captain Cartwright, that their separation from society originates in attachment and fidelity; that, having by some accident lost their mate, they will not readily pair again. Whatever may be the causes, it has been remarked, that they have invariably a black mark on the skin of their backs; this is called a saddle, and by it they are easily distinguished from the others.

OF THE RAT TRIBE.

THE front teeth are wedged-shaped. There are generally three grinders on each side, but sometimes only two. All the species have clavicles, or collar-bones, in the skeleton.

This tribe contains all those animals which have the appellation of Murine Quadrupeds; and although the term Rat has been adopted, it includes not only the species that we know by the name of Rats, but also the Mice, and others called Beaver-Rats.

These animals, in general, live in holes in the ground; and are swift, and able to climb trees. Their food is chiefly vegetable; which most of them seek in the night, keeping in their retreats during the day.

They feed in a somewhat upright position, carrying the food to their mouth in their fore paws. They are very prolific.

THE MUSK-RAT.

This animal is about the size of a small Rabbit. Its head is thick and short, and somewhat resembles that of the Water-rat. The eyes are large; the ears short, rounded, and covered both inside and outside with hair. Its fur is soft, glossy, and of a reddish-brown color; and beneath this there is a thick down. The tail is flattened laterally, and covered with scales.

THE MUSK-RAT.

The Musk-rat is a native of nearly all parts of America, from Hudson's Bay as far south as Carolina.

In the general form of their body, as well as in many of their habits of life, the Musk-rats have a considerable resemblance to the Beaver. They construct their habitation of dry plants, but particularly of reeds, cement it with clay, and cover it with a dome. At the bottom and sides of this there are several pipes, through which they pass in search of food; for they lay up no provisions for winter. They have also subterraneous passages, into which they retreat whenever their houses are attacked.

Their habitations, which are intended only for use in the winter, are rebuilt annually. At the approach of this season they begin to construct them, as places of retirement from the inclemencies of the weather. Several families occupy the same dwelling, which is frequently covered many feet deep with snow and ice: the animals notwithstanding, contrive to creep out, and feed on the roots that are also buried beneath. They feed also on fresh-water muscles; and, when the season permits it, on fruit. Kalm, in his American Travels, says that apples are used in traps as baits for them. In winter, the male and female are seldom seen apart from each other. During the summer these animals wander about, generally in pairs, and feed voraciously on herbs and roots.

The Musk-rats, as well as the Beavers, seem to have their drones or terriers. which are at no trouble in the common operation of build-

ing houses. They are remarkable for a strong musky smell; whence they have their specific name. Their nests are formed of sticks, and lined on the inside with some soft materials; and the females produce from three to six young-ones at a birth. When taken young, they are easily tamed; they are then very playful and inoffensive, and never bite.

The flesh of Musk-rats is sometimes eaten; and the fur is used in the manufacture of hats.

THE BROWN RAT, AND BLACK RAT.

The Brown and the Black Rat are both of them species much too well known in most countries where they are found. The former,

THE BROWN RAT.

which was first introduced among us from Norway, has greatly diminished the number of the others; but has itself multiplied so excessively, and is so strong and voracious, as to form no very acceptable substitute.

In Ireland the Brown Rats have nearly destroyed even the whole race of frogs; which the inhabitants were somewhat anxious to preserve, in order to clear their fields of insects, and render their waters more healthful. While the Frogs continued in great numbers, the Rats also multiplied; but since the latter are deprived of this considerable part of their subsistence, they also are become much less numerous.

During summer, the Brown Rats reside chiefly in holes within the banks of rivers, ditches, and ponds; but, at the approach of winter, they come to the farm-houses, and enter the corn-ricks and barns, where they devour much of the corn, but damage infinitely more than they eat. They chiefly reside in the walls and about the floors of old houses: here they frequently destroy the furniture; and they

have even been known to gnaw the extremities of infants while asleep. They are also excessively destructive to eggs, Poultry, Pigeons, Rabbits, and game of every description. They swim with ease, and even dive in pursuit of Fish.

Their produce is enormous; as they bring from ten to twenty young-ones at a litter, and this thrice a-year. Thus, their increase is such, that it is possible for the descendants of a single pair (supposing food to be sufficiently plentiful, and they had no enemies to lessen their numbers) to amount, at the end of about two years, to upwards of *a million*. But this baneful increase is counteracted, not only by numerous enemies among other animals, but by their destroying and eating each other. A large and strong Rat is as much dreaded by its own species, as the whole species is dreaded by other creatures that are their prey. Thus has Providence kindly interfered in keeping them within due bounds.

THE BLACK RAT.

Dogs and Cats destroy, but do not eat them. The Weasel is in perpetual enmity with them; and will pursue them into their holes, and fight with them there. This little creature endeavors to fix itself on their bodies, and suck their blood; which it very often effects.

In the Isle of France, Rats are found in such prodigious swarms, that it is said the place was abandoned by the Dutch on account of their number. In some of the houses they are so numerous, that thirty thousand have been known to be killed in a year. They make immense hoards underground, both of corn and fruit; and climb up trees to devour young birds. They pierce the very thickest rafters. At sun-set they may be seen running about in all directions; and in a single night they will frequently destroy a whole crop of corn. M. de St. Pierre says, he has seen a field of maize, in which they had not left a single ear. They are supposed to have been originally brought to that island in some of the European vessels.

RAT IN A PANTRY.

On the return of the Valiant man-of-war from the Havana, in the year 1766, its Rats had increased to such a degree, that they destroyed a hundred-weight of biscuit daily. The ship was at length smoked between decks, in order to suffocate them. This had the desired effect; and six hampers were, for some time, filled every day with the Rats that had thus been killed.

In Egypt, as soon as the Nile, after having fertilized the land, leaves it free for cultivation, multitudes of Rats and Mice are seen to issue in succession from the moistened soil. The Egyptians hence believe

that these animals are generated from the earth itself. Some of the people assert that they have seen the Rats in their formation, one half of the bodies flesh, and the other half mud.

Rats swarm in Otaheite, where they feed on the fruits of the country; and they are there so bold, as sometimes even to attack the natives when asleep. The inhabitants hold them in abhorrence as unclean: and even avoid killing them, lest they should be polluted by the touch.

A gentleman, about thirty years ago, travelling through Mecklenburg, was witness to a very singular circumstance respecting one of these animals, in the post-house at New Hargard. After dinner, the landlord placed on the floor a large dish of soup, and gave a loud whistle. Immediately there came into the room a Mastiff, an Angora Cat, an old Raven, and a large Rat, with a bell about its neck. They all four went to the dish, and, without disturbing each other, fed together: after which, the Dog, Cat, and Rat, lay before the fire, while the Raven hopped about the room. The landlord, after accounting for the familiarity which existed among these animals, informed his guest that the Rat was the most useful of the four; for that the noise he made had completely freed the house from the Rats and Mice with which it had been before infested.

THE COMMON OR DOMESTIC MOUSE.

Although of naturally timid and fearful disposition, this little animal sometimes becomes confident and sociable. Its sight and hearing are extremely acute; and, when it observes the least motion, or hears the slightest noise, it listens attentively, sitting erect on its hinder feet; and, if the alarm continue, it runs in haste to its retreat. But if it be gradually encouraged, and nourishment and security be afforded, it by degrees loses these fears. Schreber relates an instance of a Mouse that made its appearance every day at the table of its benefactor, and there waited until it had received its usual portion of food, which it devoured, and then ran away.

THE COMMON MOUSE.

The Mouse is much more adapted to serve as the companion of mankind, than to be an object of aversion. Its tenderness and timidity ought to incite and receive our compassion. Schreber saw a Mouse fall into convulsions through fear, whilst held in the hand.

This little creature is now known in nearly all parts of the habitable world. It forms its place of concealment in walls, under floors, or behind the wainscoting of houses; and in such places it sometimes stores a considerable magazine of provisions for future subsistence. Its food is various; and, as it is able to pass through a very small hole, there are few places that are secure from its approach.

The increase of these animals is very rapid. The females produce their young-ones, generally from five to eight in number, at all times of the year; and they grow so quickly, that, by the expiration of two or three months, they are themselves capable of breeding.

Many modes have been invented of destroying Mice. Among other things, sponge, fried in fat, has been found a deadly poison to them.

MICE IN A PANTRY.

THE LONG-TAILED FIELD-MOUSE

LONG-TAILED FIELD-MOUSE.

The general length of this Mouse is about four inches and a half; and of the tail nearly four inches. Its color is yellowish-brown above, and whitish on the under parts.

SHORT-TAILED FIELD-MOUSE.

This species is larger than the last, measuring about six inches from the nose to the origin of the tail. The tail is seldom more than an inch and a half in length. Its fur, which is very close and compact, is of a dark ferruginous color.

These animals are found only in fields and gardens. They live in burrows, a foot or more under ground, where they lay up great quantities of acorns, nuts, and beech-mast: according to M. de Buffon, as much as a bushel of such subsistence has been sometimes found in

a single hole. Their habitations are frequently divided into two compartments; the one for living in with their young, and the other for their provisions. These are usually discoverable by small heaps of mould thrown up at the entrance.

A remarkable instance of sagacity in a Long-tailed Field-mouse, occurred to the Rev. Mr. White, as his people were pulling off the lining of a hot-bed, in order to add some fresh dung. From the side of this bed something leaped with great agility, that made a most grotesque appearance, and was not caught without much difficulty. It proved to be a large Field-mouse, with three or four young-ones clinging to her teats by their mouths and feet. It was amazing that the desultory and rapid motions of the dam did not oblige her litter to quit their hold, especially when it appeared that they were so young as to be both naked and blind.

It is a very pretty little animal, gentle in its disposition, and though very timid in a state of nature, it readily bears confinement.

Field-mice are very prolific. They breed more than once in the year, and often produce litters of eight or ten at a time. They generally make the nest for their young-ones very near the surface of the ground, and often in a thick tuft of grass.

THE HARVEST MOUSE.

The length of the Harvest Mouse is seldom more than two inches and a half; and of the tail about two inches. The weight is sometimes not more than the sixth part of an ounce. Its general color is nearly that of the Squirrel or Dormouse. The belly is white.

THE HARVEST MOUSE AND NEST.

The Rev. Gilbert White seems to have been the first person who ascertained and examined this diminutive species of Mouse. It hitherto appears to have been found only in Hampshire, and a few of the adjacent counties.

A nest of one of these little animals was brought to him. It was most artificially platted, and composed of the blades of wheat. Its form was perfectly round; and its size about that of a cricket-ball.

The aperture was so ingeniously closed, that there was no discovering to what part it belonged. This nest was so compact and well filled, that it would roll across the table without being discomposed, though it contained eight young Mice. As this nest was perfectly full, how could the dam come at her litter respectively, so as to administer a teat to each? Perhaps she opens the different places for that purpose, adjusting them again when the business is over; but she could not possibly be herself contained in the ball with her young-ones, which moreover would be daily increasing in bulk. This wonderful procreant cradle, an elegant specimen of the efforts of instinct, was found in a wheat-field, suspended in the head of a thistle.

Mr. White remarked, that though the Harvest-mice hang their nest above the ground, yet in winter they burrow deep in the earth, and make warm beds of grass; but their grand rendezvous seems to be in corn-ricks, into which they are carried during the harvest. This gentleman measured some of these animals, and found, that from the nose to the tail, they were two inches and a quarter long. *Two* of them in a scale weighed down just one copper halfpenny, about the third of an ounce avoirdupois! whence he supposes them to be the smallest of the British quadrupeds. A full-grown domestic Mouse would weigh at least six times as much as one of these.

THE LEMMING RAT.

The Lemming Rats vary much both in size and color: those of Norway being almost equal to Water Rats, while those of Lapland are scarcely as large as Mice. The former are elegantly variegated with black and tawny in the upper parts, having the sides of the head and the under parts white. The legs and tail are grayish; and the under parts of the body of a dull white. The head of the Lemming is large, short, and thick. The body is also thick; the neck short, and the limbs are stout and strong. The tail is very short.

THE LEMMING RAT.

These animals feed entirely on vegetables. In summer they form shallow burrows under the surface of the ground, and in winter they make long passages beneath the snow in search of food; for, as they lay up no winter store, they are reduced to the necessity of hunting for it during all the rigors of the cold season.

They seem to be endowed with a power of distinguishing the approach of severe weather; for before the setting in of a cold winter

they leave their haunts in the above countries, and emigrate in immense multitudes southward towards Sweden, always endeavoring to keep a direct line. These emigrations take place at uncertain intervals, though generally about once every ten years; and, exposed as they are to attack, great numbers of them become the food of predacious animals. Multitudes also are destroyed in endeavoring to swim over the rivers or lakes. From these different causes, very few live to return to their native mountains; and thus a check is put to their ravages, as an interval of several years is necessary to repair their numbers sufficiently for another invasion. They are bold and fierce, and will even attack men and animals if they meet them in their course; and they bite so hard, as to allow themselves to be carried to a considerable distance hanging by their teeth, before they will quit their hold.

If they are disturbed or pursued while swimming over a lake, and their phalanx is separated by oars or poles, they will not recede; but keep swimming directly on, and soon get into regular order again. They have sometimes been known even to endeavor to board or pass over a vessel. This army of Rats moves chiefly by night, or early in the morning; and makes such destruction among the herbage, that the surface of the ground over which they have passed, appears as if it had been burned. Their numbers have at times induced the common people of Norway to believe that they descended from the clouds; and the multitudes that are sometimes found dead on the banks of rivers or other places, corrupt by their stench the whole atmosphere around and thus produce many diseases.

These animals never enter dwellings of any description, to do mischief; but always keep in the open air. When enraged, they raise themselves up on their hind feet, and bark like little Dogs. Sometimes they divide into two parties, attack each other, and fight like hostile armies. From these battles, the inhabitants of Lapland pretend to foretell not only wars, but also their success, according to the quarters the animals come from, and the side that is defeated. The Lemming Rats are natives chiefly of the mountainous parts of Lapland, Sweden and Norway.

The females breed several times in the year, and produce five or six young-ones at each litter. It has been observed, that they have sometimes littered during their migrations, and they have been seen carrying some of their young-ones in their mouths, and others on their backs.

THE ECONOMIC RAT.

The length of the Economic Rat is about four inches; and that of its tail, one inch. The limbs are strong; the ears short, naked, and almost hidden beneath the fur of the head. The general color of the fur is tawny, somewhat whiter beneath than on the back.

These animals are natives of Siberia and Kamtschatka.

The migrations of the Economic Rats, are not less extraordinary

than those of the Lemmings. In the spring of the year they collect together in amazing numbers, and proceed in a course directly westward; swimming with the utmost intrepidity over rivers, lakes, and even arms of the sea. Many of them are drowned, and many destroyed by water-fowl or rapacious fish. Those that escape, emerging from the water, rest awhile to bask, dry their fur, and refresh themselves. The Kamtschadales, who have a kind of superstitious veneration for these little creatures, whenever they find any of them thrown upon the banks of the rivers, weak and exhausted, render them every possible assistance. As soon, says Dr. Grieve, as they have crossed the river Penschinska, at the head of the gulf of the same name, they turn in a south-westerly direction; and, about the middle of July, generally reach the rivers Ochotska and Judoma, a distance of about a thousand miles! The flocks are also so numerous that travellers have sometimes waited more than two hours for them to pass. The retirement of these animals is very alarming to the Kamtschadales; but on their return, which is generally in October, occasions the utmost joy and festivity, a successful chase and fishery being always considered as its certain consequence.

THE ÉCONOMIC RAT.

The Kamtschadales never destroy the hoards of these Rats. They sometimes take away part of their store; but, in return for this, they invariably leave some kind of food to support them in its stead.

The Economic Rats construct burrows, with the utmost skill, immediately below the surface of a soft, turfy soil. They form a low chamber of a flattish arched form, about a foot in diameter, to which they sometimes make as many as thirty small passages or entrances. Near the chamber they often construct other caverns, in which they lodge their winter stores. These consist of plants; which they gather in summer, dry, and bring home; and even, at times, they bring them out of their cells to give them a more thorough drying in the sun. The Economic Rats associate in pairs; and except during the summer-time, (when the male leads a solitary life in the woods,) the male and female are generally to be found in the same nest.

THE HAMSTER RAT.

THE HAMSTER RAT.

The Hamster is about the size of the Brown or Norway Rat; but much thicker, and its tail is only about three inches long. The color of this Rat is reddish brown above, and black beneath; but on each side of the body there are three large, oval, white spots. The ears are rather large. On each side of the mouth there are two pouches or receptacles for food; which, when empty, are so far contracted, as not to appear externally; but, when filled, they resemble a

pair of tumid bladders, with a smooth veiny surface, which is concealed by the fur of the cheeks.

These, the only species of Rats with pouches in their cheeks, that are found in Europe, are natives of Austria, Silesia, and many parts of Germany. They live under the surface of the ground, burrowing obliquely downwards. At the end of their passage, the male sinks one perpendicular hole; and the female several, sometimes seven or eight. At the extremity of these are formed several vaults; either as lodges for themselves and their offspring, or as store-houses for their food. Each young-one has its separate apartment, and each sort of grain its appropriate vault. The vaults are of different depths, according to the age of the animals. A young Hamster makes them scarcely a foot deep; an old one sinks them to the depth of four or five feet. The whole diameter of the habitation, with all its communications, is sometimes eight or ten feet.

The Hamsters feed on grain, herbs, and roots; and, at times, even eat flesh. Their pace is slow; but in burrowing into the ground they exhibit great agility. In order to facilitate the transportation of food to their magazines, they are furnished with pouches in their cheeks. These are each of sufficient capacity to hold about two ounces of grain; which the animal empties into its store-house, by pressing its two fore feet against its cheeks. When its cheeks are full, a Hamster may easily be caught with the hand, without the risk of being bitten; as it has not, in this condition, the free motion of its jaws. If, however, a short time be allowed, it soon empties its pouch, and stands on the defensive.

On dissecting one of these animals, Dr. Russel found the pouch, on each side of its mouth, stuffed with young French beans, arranged lengthways, so exactly and so close to each other, that it appeared strange by what mechanism this had been effected; for the membrane which forms the pouch, though muscular, is extremely thin, and the most expert fingers could not have packed the beans in more regular order. When they were laid loosely on the table, they formed a heap three times the bulk of the animal's body.

What these creatures lay up, is not for their winter's support, (as during that season they always sleep,) but for their nourishment, previously to the commencement, and after the conclusion, of their torpid state. The quantity in the burrows depends upon the size and sex of the inhabitants: the old ones frequently amass upwards of a hundred-weight of grain, but the young-ones and the females provide a quantity much smaller.

At the commencement of the cold season, the Hamsters retire into their hiding-places, the entrance to which they close up. Here they repose for some months; and they are often dug up by the peasantry, who at this season of the year employ much of their time in hunting for their retreats. These are easily known by the small mounds of earth raised at the end of the galleries.

When the Hamster is found in a torpid state, his head is bent under his body, between the two fore legs; and the hind legs rest upon his muzzle. The eyes are closed; and when the eye-lids are forced

open, they instantly shut again. The members are all stiff, and the body feels as cold almost as ice. It has been satisfactorily ascertained that this animal, in order to become torpid, must be excluded from all communication with the external air. If a Hamster be put into a cage filled with earth and straw, and exposed to a degree of cold sufficient to freeze water, he will continue awake and active; but if the cage be sunk four or five feet beneath the surface of the ground, he will soon be as torpid as if in his own burrow.

The life of a Hamster is divided between eating and fighting. He seems to have no other passion than that of rage; which induces him to attack every animal that comes in his way, without in the least attending to the strength of the enemy. Ignorant of the art of saving himself by flight, rather than yield he will allow himself to be beaten to pieces with a stick. If he seize a man's hand, he must be killed before he will quit his hold. The magnitude of the Horse terrifies him as little as the address of the Dog, which last is fond of hunting him. When the Hamster perceives a Dog at a distance, he begins by emptying his cheek pouches, if they happen to be filled with grain: he then blows them up so prodigiously, that the size of his head and neck greatly exceeds that of the rest of the body. He raises himself on his hind legs, and thus darts upon the enemy. If he catches hold, he never quits his foe but with the loss of life. This ferocious disposition prevents the Hamster from being at peace with any animal whatever. He even makes war against his own species. When two Hamsters meet they never fail to attack each other, and the stronger always devours the weaker. A combat between a male and female commonly lasts longer than that between two males. They begin by pursuing and biting each other; then each of them retires aside, as if to take breath. After a short interval they renew the combat, and continue to fight till one of them falls. The vanquished animal uniformerly serves for a repast to the conqueror.

The females bring forth their offspring twice or thrice in the year; each litter consisting of six or eight young-ones; and their increase in some years is excessively rapid. In about three weeks after their birth, the young-ones are able to seek their own provisions, which the mother compels them to do; and in fifteen or sixteen days they begin to dig the earth.

In some seasons, the Hamsters are so numerous that they occasion a dearth of corn. In one year, about eleven thousand skins, in another fifty-four thousand, and in a third year eighty thousand, were brought to the Town-house of Gotha, as vouchers of claims to the rewards allowed for the destruction of these animals.

THE CANADA FIELD RAT.

Akin to the Hamster is the Canada Field Rat with its enormous cheek pouches for storing its food.

THE WATER RAT.

The Water Rat is a native of England, and very common on the banks of rivers, brooks, &c. It digs holes in the bank, and is reported to eat fish, frogs, &c., but this is very doubtful. These animals exist in great numbers round Oxford, and I have repeatedly watched them feeding. I never saw them eating fish, nor found fish-bones inside their holes, except when a Kingfisher had taken possession; but I have frequently seen them gnawing the green bark from reeds, which they completely strip, leaving the mark of each tooth as they proceed. I shot one while feeding, and at first thought that the marks of its teeth were caused by the shot, for until that time I had supposed that the Water Rat fed on fish.

THE WATER RAT.

OF THE MARMOT TRIBE.

THE Marmots have two wedge-shaped front teeth in each jaw; and five grinders on each side in the upper, and four in the lower jaw. They have collar-bones in the skeleton.

This tribe does not differ, in many particulars, from that of the Rats. The animals have thick cylindrical bodies, and large roundish heads. The fore feet have each four claws, and a very small thumb; and the hind feet five claws. They reside in subterraneous holes, and pass the winter in sleep. Only eight species have as yet been discovered.

THE ALPINE MARMOT.

This animal is about sixteen inches in length, has a short tail, and bears some resemblance both to the Rat and the Bear. The color is brownish above, and bright tawny on the under parts. The head is rather large, and flattish; the ears short, and hid in fur; and the tail is thick and bushy.

Being natives chiefly of the highest summits of the Alps and the Pyrenean Mountains, these singular quadrupeds delight in the regions of frost and snow, and are seldom found on the plains, or in the open country. Their holes are constructed with much art; each of them forming a kind of gallery in the form of the letter Y, with an aperture at each upper extremity, and terminating below in a capacious apartment, where several of the animals lodge together. This apartment is well lined with moss and hay, of which they lay up a great store during the summer.

It is affirmed that the labor of collecting the materials for their nest, is carried on by the animals in concert; that some of them cut the finest herbage, which is collected by others; and that they transport it to their dens in the following manner: One, it is said, lies down on his back, allows himself to be loaded with hay, and extends his limbs; and others trail him, thus loaded, by the tail, taking care not to overset him. The task of thus serving as a vehicle, is divided alternately among the number. "I have often seen them practise this mode of conveyance, (says M. Beauplau, in his account of Ukraine,) and have had the curiosity to watch them at it for several days successively." The friction occasioned by their sustaining a passive part in the operation, is assigned as a reason why the hair is generally rubbed off from the backs of these animals. But it is more probable that this is produced by their frequent digging of the earth, which alone is sufficent to rub off the hair. However this may be, it is certain that they dwell together, and work in common in their habitations, where they pass three-fourths of their lives. Thither they retire during rain, or at the approach of danger; and they never go out but in fine weather, and even then to no great distance.

One of these animals stands sentinel upon a rock, while the others gambol about upon the grass, or are employed in cutting it in order to make hay. If the sentinel preceive a man, an Eagle, a Dog, or any other dangerous animal, he instantly alarms his companions by a loud whistle, and is himself the last that enters the hole.

The Old Marmots, at break of day, come out of their holes to feed; afterwards they bring out their young-ones. The latter scamper on all sides; chase each other; sit on their hind feet; and remain in that posture, facing towards the sun, with an air expressive of satisfaction. They are fond of warmth; and, when they think themselves secure, will bask in the sun for several hours successively.

HUNTING MARMOTS.

The Marmot has a quick eye, and discovers an enemy at a considerable distance. He never does the least injury to any other animal, and when himself attacked, attempts to escape. But, if flight be impossible, he will defend himself with spirit against even man and Dogs.

In countries where rhubarb grows, it is said that the Marmots generally fix their residence near those plants: and that, if ten or twenty of these plants are adjacent to each other, there are always several of their burrows immediately under the shade and protection of the leaves.

About the end of September, or the beginning of October, the Marmots retire to their holes, in which they become torpid, and from which they do not again come abroad until the beginning of April. When they feel the first approach of the sleeping season, they shut up both of the passages to their residence; and they perform this

operation with so much labor and solidity, that it is more difficult to dig the earth in the parts they have thus fortified, than in any adjacent spot. At this time they are very fat, weighing sometimes as much as twenty pounds each; and they continue so for three months; but they afterwards gradually decline, and, by the end of winter, become extremely emaciated. When found in their winter retreats, they appear rolled up like a ball, and are covered with hay.

SWISS BOY WITH TAME MARMOT.

If caught when young, the Marmot may easily be domesticated. It will walk on its hind feet, sit upright, and carry food to its mouth with its fore feet. It will dance with a stick between its paws, and perform various tricks to please its master.

In the winter season, these animals are sought after with great eagerness by the inhabitants of the countries where they are found; and are killed in immense numbers, both on account of their flesh, and for their skins.

THE BOBAC.

The Bobac is about the size of the Alpine Marmot. Its color is gray above, and fulvous or ferruginous beneath. The tail is short, somewhat slender, and very hairy.

THE BOBAC.

It is a native of the mountainous parts of Poland, Russia, and some other countries of Europe.

The burrows which the Bobacs form in the ground, are constructed obliquely, and are of the depth of two, three, or four yards. They consist of several galleries, which have one common entrance from the surface, each gallery terminating in a nest for some of its inhabitants. Sometimes, however, the burrows consist of but one passage.

Though these burrows are found in greatest numbers where the earth is lightest, yet they are very common even in the strata of the mountains. In hard and rocky places, from twenty to forty of the animals join together to facilitate the work; and they live in society, each with its nest at the end of its respective gallery. Towards the approach of winter, they collect into their nests the finest hay they can procure; and in such plenty, that sufficient is often found in one nest for a night's food for a horse.

During the middle or sunny part of the day, they sport about the entrance of their holes; but they seldom go far from them. At the sight of man, they retire with a slow pace; and sit upright near the entrance, giving a frequent whistle, and listening to the approach. In places where they live in large families, they always station a sentinel to give notice of any danger, during the time when the rest are employed in feeding.

They are mild, good-natured, and timid. They feed only on vegetables; which they go in search of in the morning, and about the middle of the day. They sit on their hams when they eat, and carry the food to their mouth with their fore paws; and in this posture it is that they defend themselves when attacked. When they are irritated, or when any one attempts to lay hold of them, they bite desperately, and utter a shrill cry. In the summer-time they eat voraciously; but they remain torpid all winter, except when kept in very warm places; and even then they eat but little, and will, if possible, escape into some comfortable place, in which to pass this dreary season. These animals soon become tame, even when taken of full age; and the young-ones are familiar from the moment they are caught.

Their flesh is eatable; and, except that it is somewhat rank, resembles that of the Hare. The fat is used in the dressing of leather and furs; and the skins are employed by the Russians for clothing. The female brings forth her young-ones in the spring, and usually produces six or eight at a litter.

THE CAPROMYS.

The Capromys is found in Cuba, where the natives call it the Utia. It is a Marmot, not larger than the Woodchuck, which it somewhat resembles. It is a harmless animal, living on vegetable food.

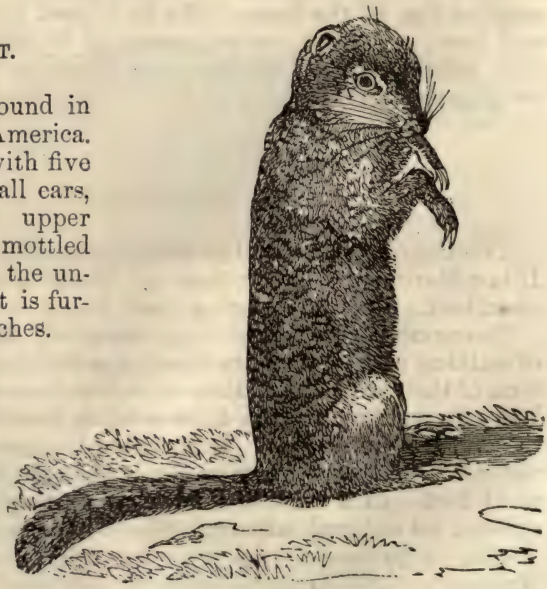
The name *Capromys* signifies a "Hog-rat," the animals in their mode of walking and other characteristics resembling the Hog, while in the form of their teeth and in their tails they have some resemblance to the Rat. In a state of nature these animals inhabit the woods, and climb trees with great facility. In reaching the leaves of those short plants which they do not require to climb, they make use of their tails as a third foot. In a state of domestication they drink tea, and do not refuse a bit of bread although it be soaked in cherry-brandy.

THE MARYLAND MARMOT.

The Maryland Marmot, called also the Woodchuck or Ground-hog, is found in the United States, is of a dark brown color, with long hair, and very short legs. It feeds on vegetable food, burrows in the ground; and is a favorite object of pursuit among boys.

PARRY'S MARMOT.

Parry's Marmot is found in the arctic regions of America. It has the fore paws with five toes on each, very small ears, and long tail. The upper part of the body is mottled with black and white, the under part rusty red. It is furnished with cheek pouches.



PARRY'S MARMOT

OF THE SQUIRRELS IN GENERAL.

THEY have two front teeth in each jaw, the upper ones wedge-shaped, and the lower sharp; five grinders on each side of the upper jaw, and four on each side of the under one. They have also collar-bones in the skeleton; and, in most of the species, the tail spreads towards each side.

The Squirrels are for the most part light, nimble, and elegant animals: they climb trees with the utmost agility, and spring, with astonishing security, from one branch to another. Some of them are provided with hairy membranes, that extend from the fore to the hind legs: these, when spread out, render them more buoyant than they otherwise would be, and enable them to leap through considerable distances from one tree to another. A few of the species form their nests, and live almost entirely in the trees; and others burrow under the ground. None of them are carnivorous. Many of the Squirrels may, with care, be rendered docile; but when they are in the least irritated, they attempt to bite. In confinement they are generally very frolicsome. When they are on the ground, they advance by leaps; and in eating they sit erect, and hold the food in their fore paws.

THE SQUIRREL.

THE COMMON SQUIRREL.

This elegant little animal is equally admired for the neatness of its figure, and the activity and liveliness of its disposition. Though naturally wild and timid, it is soon reconciled to confinement, and is easily taught to receive with freedom the most familiar caresses from the hand that feeds it.

THE COMMON SQUIRREL.

In the spring these animals are peculiarly active. During this season they pursue each other among the trees, and exert various efforts of agility. In the warm summer nights they may also be observed in a similar exercise. They seem to dread the heat of the sun; for during the day-time, they commonly remain in their nests, and they make their principal excursions by night.

The nest of the Squirrel is, in its construction, exceedingly curious. It is generally formed among the large branches of a tree, where

they begin to fork off into small ones. After choosing the place where the timber begins to decay, and where a hollow may the more easily be formed, the Squirrel begins by making a kind of level between these forks; and then, bringing moss, twigs, and dry leaves, it binds them together with such art, as to resist the most violent storm. This is covered up on all sides; and has but a single opening at the top, just large enough to admit the little animal; and this opening is itself defended from the weather by a kind of canopy, formed like a cone, so as to throw off the rain, however heavy it may fall. The nest thus formed, is very commodious and roomy below; soft, well knit together, and every way convenient and warm. The provision of nuts and acorns is seldom found in its nest; but in the hollows of the tree, these are carefully laid up together, and they are never touched by the animals except in cases of necessity, when no food is to be had abroad. Thus a tree serves both for a retreat and a storehouse; and, without leaving it during the winter, the Squirrel possesses all those enjoyments which his nature is capable of receiving.

This little animal is extremely watchful: and it is said, that if the tree in which it resides is but touched at the bottom, it takes the alarm, quits its nest, at once flies off to another tree, and thus, in case of necessity, travels with ease along a whole forest, until it finds itself perfectly out of danger. In this manner it continues for some hours at a distance from home, until the alarm is past; and then it returns by paths that, to nearly all quadrupeds but itself, are utterly impassable. Its usual way of moving is by bounds; these it takes from one tree to another at a very great distance; and if it be at any time obliged to descend, it runs up the side of the next tree with astonishing facility.

The Squirrel seldom makes any noise, except when it experiences either pain or pleasure: in the former case it emits a sharp piercing note; and in the latter it makes a noise not unlike the purring of a Cat. The tail of the Squirrel is its greatest ornament, and serves as a defence against the cold; it is likewise of use to the animal in leaping from one tree to another.

In northern climates the Squirrels, at the approach of winter, change their red summer coat to gray; and it is singular that this alteration will take place in those climates, even within the warmth of a stove. Dr. Pallas had a Squirrel entirely red, brought to him on the 12th of September. It was placed in a stove. About the 4th of October many parts of its body began to grow hoary: and when it died, which was a month afterwards, the whole body had attained a gray color; the legs, and a small part of the face, alone retaining a reddish tinge.

THE GRAY SQUIRREL.

This animal is about the size of a young Rabbit; and, except on the inside of the limbs and the under parts of the body, which are white, its color is an elegant pale gray.

GREY AND BLACK SQUIRREL.—Page 294.

Both in their form and habits of life, these animals very much resemble the Common Squirrels. They are found not only in the northern parts of the continent of Europe, but also in several districts of America. They occasionally migrate to immense distances, so that sometimes there is not one of them to be seen, during a whole winter, in places where there were millions in the preceding year. In their journeys from one part of the country to another, when it becomes necessary to pass a lake or river, it is asserted that they lay hold of a piece of pine or birch bark; and that, drawing this to the edge of the water, they mount upon it, and abandon themselves to the waves. They erect their tails, to catch the wind: but if it blows to strong, or the waves rise high, the pilot and the vessel are both overturned. This kind of wreck, which often consists of three or four thousand sail, generally enriches the Laplanders, who reside in the vicinity, and who find the dead bodies on the shore: and, if these have not lain too long on the sand, they prepare the furs for sale. But when the winds are favorable, the little adventurers make a happy voyage, and arrive in safety at their destined port.

THE GRAY SQUIRREL.

In North America these animals sometimes commit great havoc in the plantations, but particularly among the maize; for they climb up the stalks, tear the ears in pieces, and eat only the loose and sweet kernel which lies quite in the inside. They sometimes come by hundreds upon a maize-field, and thus destroy the whole crop of a farmer in one night. In Maryland, therefore, some years ago, every person was compelled to procure and exhibit annually four Squirrels; the heads of which, to prevent deceit, were given to the surveyor. In other provinces, every one who killed a Squirrel received from the public treasury twopence on delivering up its head. Pennsylvania alone paid, from January, 1749, to January, 1750, no less a sum than *eight thousand pounds*, currency, in rewards for the destruction of these animals; consequently, in that year, as many as six hundred and forty thousand of them must have been killed.

THE BLACK SQUIRREL.

The Gray Squirrels reside principally among the trees, in the hollows of which they form their nests, of moss and straw, and line them with softer materials. They feed on acorns, and on the various kinds of nuts with which the woods abound; and of these they collect great stores for their winter subsistence, carefully laying them up in holes which they dig for that purpose, beneath the roots of trees, or in other secure places.

When these animals are sitting on a bough, and perceive a man approach, they instantly move their tail backward and forward, and make a chattering noise with their teeth. This renders them peculiarly odious to sportsmen, who often lose their game by the alarm they thus create. It is a difficult matter to kill them with guns, since they change their places on the trees with such extreme agility, as generally to elude the shot of even the most expert marksman. If caught when young they are easily tamed; and in this state they will readily associate with other domestic animals.

The skins of the Gray Squirrels are used in America for ladies' shoes; and they are often imported into England as furs. The Black Squirrel differs from the Gray only in color.

THE MALABAR SQUIRREL.

The Malabar Squirrel is the largest known, reaching the size of a Cat. The top of the head, a band along the cheek, and the middle of the back and flanks are very bright reddish brown, the other parts yellow; but the color varies. It is very beautiful. It occurs in various parts of India; but chiefly on the Malabar coast.

THE STRIPED OR GROUND SQUIRREL.

THE length of the Striped Squirrel is about six inches; its tail, which is rather more, is not curved and bushy, but long and very narrow. The skin is of a reddish brown color; and is marked with five black streaks, one of which runs along the back, and two on each side.

The Striped Squirrels subsist upon corn and nuts of every description; and, like the common species, collect great quantities of provisions in autumn, for their subsistence during winter, and store them in their holes.

They are natives of America, and dig burrows in the ground, which serve for their habitations, and to which they fly for shelter whenever danger is near. These burrows are deep; and commonly divided into many branches, from one of which they have an opening to the surface of the ground. The advantage they derive from this is, that when they ramble abroad for food, and are prevented from entering the hole at which they went out, they may not expose themselves to their pursuers, but immediately retreat into the other. But in autumn, when the leaves are falling from the trees, it is very diverting to observe their consternation when pursued; for their holes being covered with leaves, they have then some difficulty in finding them. They run backward and forward, as if they had lost their way; and seem to know where their subterraneous haunts lie, but cannot discover the entrances. If they are pursued, and any sudden or loud noise is made, they are constraind to take refuge in the trees; but this they never do except in cases of necessity.

The subterraneous dwellings of these animals are formed with much art. They are wrought into long galleries with branches on each side, and each of them terminates in an enlarged apartment, in which they hoard their stock of winter provision. Their acorns are lodged in one; in a second, the maize; in a third, the hickory-nuts; and in a fourth, perhaps their most favorite food, the chestnut. In Siberia, the Striped Squirrels hoard the kernel of the stone-pine in such quantities, that sometimes ten or fifteen pounds weight of these have been taken out of a single magazine.

As a Swede was, some time ago, making a mill-dike, late in autumn, he took for that purpose the soil of a neighboring hill, and discovered a subterraneous walk belonging to a family of these Squirrels. After having traced this to some distance, he found a gallery on one side, like a branch parting from the main stem. It was nearly two feet long; and, at its extremity, there was a quantity of acorns of the white oak, which the careful little animal had stored up against the winter. He soon afterwards found another gallery, on one side, like the former, but containing a store of maize; a third had hickory-nuts; and the last and most secret one contained as many excellent chesnuts as would have filled two hats.

In winter, these Squirrels are seldom seen; as, during that season, they keep within their holes. On a fine, clear day, however, they sometimes come out. They frequently dig through into cellars, where the country people lay up their apples; and these they eat, or spoil in such a manner that few or none of any value are left. In the choice of their food, they are remarkably nice. They have been observed, after having filled their pouches with rye, to fling out this on meeting with wheat, and to substitute for it the superior grain.

They cannot be tamed without great difficulty; and even then it is always dangerous to handle them, as they will bite very keenly when

a person is not aware of them. These animals are killed merely on account of their skins; which, though forming but a slight and ordinary fur, have a pleasing appearance. The skins are chiefly sold to the Chinese.

THE AMERICAN FLYING SQUIRREL, AND EUROPEAN FLYING SQUIRREL.

This animal, which is a native of most parts of North America, has large black eyes, circular naked ears, and a hairy membrane extending nearly round the body. The tail, which tapers to a point, has its hair disposed flat ways on its sides. The upper parts of this Squirrel are of a cinereous brown: the belly is white, tinged with yellow. The membrane passes the fore and hind legs to the tail: on the fore legs it adheres as far as the toes, and includes a peculiar bone which is attached to the wrist, and helps to stretch out this skin in flying; and on the hind leg it extends to the ancles.

THE AMERICAN FLYING SQUIRREL.

By means of the lateral membranes with which the bodies of these Squirrels are furnished, they are able to make astonishing leaps of ten or twelve yards, and upwards, from tree to tree. In these efforts, they extend their hind legs, and stretch out the intervening skin, by which they present a greater surface to the air, and become much more buoyant than they would otherwise be. They are, however, under the necessity of taking advantage of the lower branches of the trees to which they leap; for their weight prevents them from keeping in a straight line. Sensible of this, they always take care to mount so high as to ensure them from falling to the ground. This extended skin acts upon the air somewhat in the manner of a paper kite, and not by repeated strokes, like the wings of a bird. The animal, being heavier than the air, must of course descend; the distance, therefore, to which it can jump, depends on the height of the tree on which it stands. When it is at rest, the skin is wrinkled up against its sides.

These animals are generally seen in flocks of ten or twelve together; and to persons unaccustomed to them, they appear at a distance, in their leaps like leaves blown from the trees by the wind. "When I first saw them, (says Catesby, in his account of Carolina,) I took them for dead leaves blown one way by the wind; but was not long so deceived, when I perceived many of them follow one another in the same direction."

They inhabit hollow trees, where they sleep during the day-time, and from whence they only make their appearance in the night, at which latter time they are very lively and active. They associate in flocks; several of them living in the same tree, which they never willingly quit to run upon the ground, but almost constantly reside among the branches.

The females produce three or four young-ones at a litter. This species use the same food, and form their hoards in the same manner, as others of the Squirrel tribe. They are easily tamed, and soon become familiar: they love warmth, and are fond of creeping into the sleeve or pocket of their owner; and if thrown upon the ground, they instantly show their dislike to it, by running up and sheltering themselves in his clothes. J. Stackhouse, Esq., of Pendarvis, in Cornwall, informed me, that a mercer with whom he was acquainted had one of these animals, which was quite tame. He accidentally lost it at the approach of winter. Some months afterwards, on showing some blanketing to a customer, he was surprised to observe in it a small hole: this he pursued, and found it extended to the centre of the roll, through all the folds; and at the bottom of it lay the little animal, in a perfectly torpid state.

THE EUROPEAN FLYING SQUIRREL.

This Squirrel differs from the American species principally in having its tail full of hair, and rounded at the end, and in the color of its body; the upper part of which is a fine gray, and the lower white. Its whole length is about nine inches, of which the tail occupies five.

THE EUROPEAN FLYING SQUIRREL.

It is found in the woods of Lapland and Norway, where it feeds principally on the tender branches of the beech and pine trees. In its habits of life this animal differs very little from the preceding species. It always sleeps during the day-time, and seldom appears abroad in bad weather. It is active through the whole winter; being frequently caught during that season, in the traps that are laid for the Gray Squirrels.

The females, when they have young-ones, never leave their nest in pursuit of food, without previously wrapping these carefully up in the moss. They pay to them the utmost attention; brooding anxiously over them, and tenderly sheltering their bodies, by their flying membrane, from the cold.

OF DORMICE IN GENERAL.

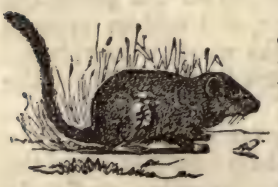
THESE animals have two front teeth in each jaw; the upper ones are wedge-shaped, the lower compressed; and in each jaw are four grinders. The whiskers are long. The tail is cylindrical, hairy, and thickest towards the end. The fore and hind legs are of nearly equal length; and the fore feet have each four toes.

THE DORMOUSE.

All the species of Dormice live in holes in the ground, where they continue in a state of torpor during the winter. Their pace is a kind of leap, in which, like the Jerboas, they are assisted by their tail. They feed entirely on vegetables, and eat only in the night. In this act they sit upright and carry their food to their mouth with the paws. When they are thirsty, they do not lap, (like most other quadrupeds,) but they dip their fore feet, with the toes bent, into the water, and drink from them.

THE COMMON DORMOUSE.

This animal is about the size of a mouse; but in proportion, more bulky. It is of a tawny red color, with a white throat. Its eyes are full, and black.



THE COMMON DORMOUSE.

The nest of the Dormouse is usually formed of interwoven moss, dead leaves, and grass, in the hollow of some low tree, or near the bottom of close shrubs. It is about six inches in diameter, and has a small orifice near the top, for the ingress and egress of the animal. In this, about the month of May or June, the female produces her offspring, which are usually four or five in number.

Dormice have not the sprightliness of the Squirrel; but, like that animal, they collect together little magazines of nuts, acorns, and other food, for their winter provision. The consumption of their hoard, during the rigor of winter, is but small; for retiring into their holes

on the approach of the cold, and rolling themselves up, they lie torpid nearly all that gloomy season. Sometimes they experience a short revival in a warm sunny day; when they take a little food, and then relapse into their former state.

OF THE JERBOAS IN GENERAL

THEY have two front teeth above, and two below; the fore legs are short, and the hind ones very long; and they have clavicles, or collar bones.

The Jerboas seem, in many respects both of conformation and habit, much allied to the Kangaroos; but an adherence to artificial system will not allow them to be arranged together. They use their long hind legs in leaping, seldom go on all-fours; and, with their fore legs, they both carry the food to their mouth, and make their holes in the ground. They are inhabitants principally of warm climates.

THE JERBOA.

THE SIBERIAN JERBOA.

This animal is of a pale yellowish fawn color on the upper parts, and white beneath. The length of its body is about eight inches: and of the tail ten. It very much resembles the Egyptian Jerboa; except in the hind feet, each of which has five instead of three toes.

Dry, hard, and clayey ground is that which the Jerboas prefer for the place of their habitation. In this they dig their burrows very speedily, not only with their fore feet, but with their teeth; and fling the earth back with their hind feet, so as to form a hillock at the entrance. The burrows are many yards long; and run obliquely and winding, but are not above half a yard in depth below the surface. They end in a large space or

THE SIBERIAN JERBOA.

THE EGYPTIAN JERBOAS.

nest, the receptacle of the purest herbs. These holes have usually but one entrance; yet, by a wonderful sagacity, the animals work from their nest another passage, to within a very small space from the surface, which, in case of necessity, they can burst through and so escape.

The sands and rubbish which surround modern Alexandria are much frequented by Jerboas. They live there in troops; and, in digging the ground, are said to penetrate even through a stratum of soft ish stone, which is beneath the layer of sand. Though not actually wild, these animals are exceedingly shy and restless: the slightest noise, or the appearance of any strange object, makes them retire to their holes with precipitation.

It is almost impossible to kill them, except when taken by surprise. The Arabs have the art of catching these Jerboas alive, by stopping up the outlets to the different galleries belonging to the colony; one excepted, through which they force them to issue from the ground.

Though animals of a chilly nature, they keep within their holes in the day-time, and wander about only during the night. They come

out about sunset, and remain abroad till the sun has drawn up the dews from the earth.

They walk only on their hind legs, the fore legs being very short; and at the approach of danger, they immediately take to flight, in leaps six or seven feet high, which they repeat so swiftly, that a man mounted on a good horse can scarcely overtake them. They do not proceed in a straight line; but jump first to one side, and then to the other, till they find either their own burrow, or some neighboring one. In leaping, they carry their tails stretched out; but in standing or walking, they carry them in the form of an S, the lower part touching the ground. If surprised, they will sometimes go on all-fours; but they soon recover their attitude of standing on their hind legs, like a bird. When undisturbed, they use the former posture; they then rise erect, listen, and hop about like a crow. In digging or eating, they drop on their fore legs; but in the latter action, they often sit upright like a Squirrel.

The Arabs of the kingdom of Tripoli, teach their Greyhounds to hunt the Antelope, by first instructing them to catch the Jerboas; and so agile are these little creatures, that Mr. Bruce has often seen, in a large court-yard or enclosure, the Greyhound employed a quarter of an hour before he could kill his diminutive adversary; and had not the Dog been well trained, so as to make use of his feet as well as his teeth, he might have killed two Antelopes during the time that he was occupied in killing one Jerboa.

In their wild state these animals are fond of tulip roots, and of nearly all the edible plants; but in confinement, they do not refuse raw meat. It requires no difficulty to tame them, but it is necessary that they should be kept warm. They are so susceptible of cold, as to foretel bad weather by wrapping themselves close up in their cage before its commencement; and those that are abroad, always, on these occasions, stop up the mouths of their burrows. They sleep during the winter; but a warm day sometimes revives them. On the return of the cold, they always retreat again to their holes.

M. Sonnini, while he was in Egypt, fed, for some time, six of these animals, in a large cage of iron wire. The very first night they entirely gnawed asunder the upright and cross sticks of their prison; and he was under the necessity of having the inside of the cage lined with tin. They were fond of basking in the sun; and the moment they were put into the shade, they clung close to each other, and seemed to suffer much from the privation of warmth. They did not usually sleep during the day. Though they had great agility in their movements, gentleness and tranquillity seemed to form their character. They suffered themselves to be stroked with great composure; and never made a noise nor quarrelled, even when food was scattered among them. No distinguishing symptoms of joy, fear, or gratitude, were discoverable in their disposition; and their gentleness was by no means either amiable or interesting; it appeared the effect of a cold and complete indifference, approaching to stupidity. Three of these animals died, one after another before M. Sonnini left Alexandria.

Two died on a rough passage to the island of Rhodes; and the last, he supposes, was devoured by Cats when he was in that island.

He says the Siberian Jerboas are so tender, that it is very difficult to transport them into other climates: but, as an indispensable precaution to those who attempt it, he advises that they be closely shut up in strong cages, or in other conveniences, without any possibility of escape; for their natural disposition inciting them to gnaw whatever comes in their way, they may occasion considerable damage to a ship in the course of her voyage; and, being able to eat through the hardest wood, may even endanger her sinking.

These animals, which are natives of various parts of the eastern deserts of Siberia, and also of Barbary, Syria, and some parts of Tartary, breed several times in the summer, and usually produce seven or eight young-ones at a litter. The Arabs eat them, and as articles of food, esteem them among the greatest delicacies of their tables.

OF THE HARE TRIBE IN GENERAL.

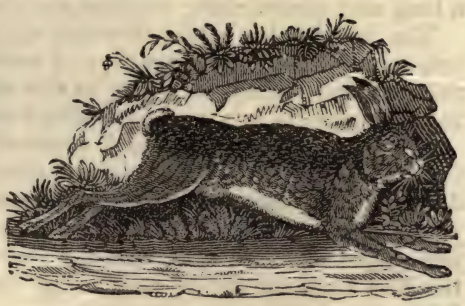
THE generic character of the Hares consist in their having two front teeth, both above and below, the upper pair duplicate; two small interior ones standing behind the others: the fore feet with five, and the hinder with four toes.

These animals subsist entirely on vegetable food. They are all remarkably timid. The habitations of most of the species are burrows, formed under the surface of the ground. Some of them collect into flocks, consisting of five or six hundred, or even more, and migrate in these numbers from place to place, frequently to a great distance, in search of food.

In northern latitudes, where the frosts of the winter are very intense, and where snow lies for several months on the ground, all the Hares, at the approach of that season, change their color, and become white. They are thus enabled, in a great measure, to elude the pursuit of their enemies.

THE COMMON HARE.

This animal is found throughout Europe, and indeed in most of the northern parts of the world. Being destitute of weapons of defence, it is endowed, by Providence, with an unusual degree of fear. Its timidity is known to every one: it is attentive to every alarm, and is, therefore, furnished with ears very long and tubular, which catch the remotest sounds. The eyes are so prominent, as to enable the animal to see both before and behind.



THE COMMON HARE.

The Hare feeds in the evenings, and sleeps in his *form* during the day; and, as he generally lies on the ground, his feet are protected, both above and below, with a thick covering of hair. In a moonlight evening many Hares may frequently be seen sporting together, leaping about and pursuing each other; but the least noise alarms them, and they then scamper off, each in a different direction. Their pace is a kind of gallop, or quick succession of leaps; and they are extremely swift particularly in ascending the higher grounds, to which, when pursued, they generally have recourse; here their large and strong hind legs are of singular use to them.

During winter they generally choose a form exposed to the south, that they may obtain all the possible warmth of that season; and in summer, when they are desirous of shunning the hot rays of the sun, they change this for one with a northerly aspect; but, in both cases, they have the instinct of generally fixing upon a place where the surrounding objects are nearly of the color of their own bodies.

HARE IN ITS FORM.

It was observed of one Hare, that, as soon as the Dogs were heard, though at a distance of nearly a mile, she rose from her form, swam across a rivulet, then lay down among the bushes on the other side, and by this means evaded the scent of the hounds. When a Hare has been chased for a considerable length of time, she will sometimes push another Hare from its seat, and lie down there herself. When hard pressed, she will mingle with a flock of Sheep, run up an old wall, and conceal herself among the grass on the top of it, or cross a river several times at small distances. She never runs in a line directly forward; but constantly doubles about, which frequently throws

the Dogs out of the scent: and she generally goes against the wind. It is remarkable that Hares, however frequently pursued by the Dogs, seldom leave the place where they were brought forth, or that in which they usually sit; and it is a common thing to find them, after a long and severe chase, in the same place on the following day.

The females have less strength and agility than the males: they are, consequently, more timid; and never suffer the Dogs to approach them so near, before they rise, as the males. They are likewise said to practise more arts, and to double more frequently.

This animal is gentle, and susceptible even of education. But, though it exhibits some degree of attachment to its master, the Hare does not often become altogether domestic: for, even when taken very young, brought up in a house, and accustomed to kindness and attention, no sooner is it arrived at a certain age, than it generally seizes the first opportunity of recovering its liberty, and escaping to the fields.

Whilst Dr. Townsend was at Göttingen, a young Hare was brought to him, which he took so much pains with, as to render it more familiar than these animals commonly are. In the evenings it was so frolicsome, that it would run and jump about his sofa and bed. Sometimes, in its play, it would leap upon and pat him with its fore-feet; or whilst he was reading, would even knock the book out of his hand. But whenever a stranger entered the room, the little animal always exhibited considerable alarm.

BOYS TRAPPING HARES.

Mr. Borlase saw a Hare that was so familiar as to feed from the hand, lie under a chair in a common sitting-room, and appear, in every other respect, as easy and comfortable in its situation as a Lap-dog. It now and then went out into the Garden, but after regaling itself, always returned to the house, as its proper habitation. Its usual companions were a Greyhound and a Spaniel, both so fond of Hare-hunting, that they often went out together for that purpose, without any person accompanying them. With these two dogs this tame Hare spent its evenings: they always slept on the same hearth, and it would frequently rest itself upon them.

Dogs and Foxes pursue the Hare by instinct: Wild Cats, Weasels.

DOGS HUNTING THE HARE.

and birds of prey, devour it; and man, far more powerful than all its other enemies, makes use of every artifice to seize upon an animal which constitutes one of the numerous delicacies of his table. This defenceless animal is even rendered by him an object of amusement in the chase.

The period of gestation in the Hare is about a month; and the females generally produce three or four young-ones at a litter, and this about four times in the year. The eyes of these are open at their birth: the mother suckles them about twenty days, after which they leave her and procure their own food. They make forms at a little distance from each other, and never go far from the place where they were brought forth. The Hare lives about eight years.

THE RABBIT.

Rabbits are partial to sandy hillocks, on light soils, which present no obstruction to their burrowing; and they prefer situations which are not far distant from those kind of vegetables to which they are most partial as food. They live in burrows formed under the surface of the ground; and in which the females bring forth their offspring. The fecundity of these animals is truly astonishing. They breed

THE RABBIT

several times in the year, and generally produce seven or eight young-ones at a time. Supposing this to happen regularly for about four years, the progeny from a single pair will in this period amount to more than a *million*. Their numerous enemies prevent any increase likely to prove injurious to mankind; for besides their affording food to us, they are devoured by animals of prey of almost every description, which make dreadful havoc among them. Notwithstanding all these means of destruction, the Rabbits in the Balearic islands once proved such a nuisance, that the inhabitants were obliged to implore the assistance of a military force from Augustus, the Roman emperor, to exterminate them.

THE RABBIT.

The female goes with young about thirty days. A short time previously to her littering, if she does not find a hole suited to her purpose, she digs one; not in a straight line, but of a zig-zag form. The bottom of this she enlarges every way; and then, with a quantity of hair which she pulls from her own body, she makes a warm and comfortable bed for her offspring During the whole of the first two days she never leaves them, except when compelled by hunger to do so; and then she eats with surprising quickness, and immediately returns. She always conceals them from the male, lest he should devour them; and therefore, when she goes out, she covers up the hole so carefully, that its place is scarcely perceptible to the eye. In this manner she continues her attention for about a month by which time they

FANCY RABBITS.

are able to provide for themselves. Notwithstanding the unaccountable propensity which the male has to devour its young-ones, yet, when these are somewhat grown, and are brought by the mother to the mouth of the hole, to eat such vegetables as she gets for them, he seems to know them, takes them between his paws, smooths their hair, and caresses them with great tenderness.

Rabbits, as they cannot easily articulate sounds, and are formed into societies that live under ground, have a singular mode of giving alarm. When danger is threatened, they thump on the earth with one of their hind feet; and thus produce a sound that can be heard a great way by animals near the surface. This, Dr. Darwin, from its singularity, and its aptness to the situation of the animals, concludes to be an artificial sign, and merely acquired from their having experienced its utility. He will not allow of any thing like an instinctive propensity.

THE RABBIT.

A friend of Dr. Robert Anderson of Edinburgh, had a singular breed of Rabbits, with only one ear. These propagated as fast, and as constantly produced their like, as the two-eared Rabbits from which they were originally descended.

The fur of the Rabbit is useful in the manufacture of hats

THE ALPINE HARE.

The Alpine Hare is about nine inches in length. It has a long head and whiskers; and above each eye there are two very long hairs. The ears are short and rounded. The fur is dusky at the roots, and of a bright bay color at the end slightly tipped with white, and intermixed with long dusky hairs: at first sight, however, the animals seem of a bright, unmixed bay color.

THE ALPINE HARE.

The most southern residence of these animals is on the Alpaic chain of mountains, near the lake of Baikal, in Siberia; and they extend from that part of the country as far northward as to Kamschatka. They are always found in the middle regions of the snowy mountains, where these are clad with wood, and where herbs and moisture abound. They sometimes burrow between the rocks, but more frequently lodge in the crevices. They are generally found in pairs; but in bad weather, they collect together, lie on the rocks, and whistle so much like the chirp of sparrows, as easily to deceive the hearer. At the report of a gun they run off into their holes; whence, however, if nothing more is heard, they soon return.

By the usual wonderful instinct of similar animals, they make a provision in their inclement seats against the rigorous season. A company of them, towards autumn, collect together vast heaps of favorite herbs and grasses; which they place either beneath the over-

HUNTING THE HARE.

hanging rocks, or between the chasms, or around the trunk of some tree. The way to these heaps is marked by a worn path; and, in many places, the plants appear scattered, as if to be dried in the sun and properly harvested. The heaps are formed like round or conoid ricks; and are of various sizes, according to the number of the society employed in forming them. They are sometimes about a man's height, and usually three or four feet in diameter.

Thus the animals wisely provide their winter's stock: without which, in the cold season, they must infallibly perish; for they are prevented by the depth of snow, from quitting their retreats in quest of food. They select the best of vegetables, and crop them when in the fullest vigor. These, by the very judicious manner in which they dry them, they make into excellent hay. The ricks they thus form, are the origin of fertility among the rocks; for the relics, mixed with the dung

of the animals, rot in the barren chasms, and create a soil productive of vegetation.

These ricks are also of great service to such persons as devote themselves to the laborious occupation of Sable-hunting; for, being obliged to go far from home, their Horses would often perish from want, had they not the provisions of the Alpine Hares for their support.

The people of Jakutz are said to feed both their Horses and cattle on the remnant of the winter stock of these Hares. As food, the Alpine Hares are themselves neglected by mankind; but they are the prey of numerous animals.

THE OGOTONA HARE.

The Ogotona Hare is somewhat more than six inches in length, of a pale brown color above, and somewhat white beneath; and is entirely destitute of tail.

These little creatures live under heaps of stones, or in burrows which they form in the sandy soil, and which have two or three entrances. Their nest is formed of soft grass; and the old females, for greater security, make several burrows near each other, in order that, if disturbed, they may have a secure retreat. They feed in the night; and their voice, as in the last species, is like the note of the Sparrow, but much more shrill.

THE OGOTONA HARE.

Their principal food is the tender bark of trees, and different kind of herbs. Before the approach of severe weather, even in the spring of the year, they collect a store of vegetables, with which they fill their holes. These operations are considered by the inhabitants, to be certain signs of the approaching change of weather. In autumn, directed by the same instinct as the former species, they form ricks of hay, of an hemispherical shape, about a foot high and wide. In the spring, these heaps are gone, and nothing but the relics are seen.

The Ogotona Hares inhabit all Mongolia, and beyond the lake Baikal, where they are found in great abundance. The females produce their young-ones in spring, and, by the end of June, these are fully grown.

THE CALLING HARE.

This is a smaller species than the last, but has a great resemblance to it in form. The head is thickly covered with fur; the ears are large and rounded; the legs are very short, and the feet furred beneath. The fur on the whole animal is soft, long, smooth, and of a brownish lead-color, and the hairs are tipped with black. On the sides of the body, a yellowish tinge prevails.

These are solitary animals, and rarely to be seen, even in the places

where they are most common. They choose for their habitations some dry spot amidst bushes, and covered with a firm sod; and prefer the western sides of the hills. In these they burrow, leaving a very small hole for the entrance, and thence forming long and intricate galleries, in which they make their nests.

Their voice alone betrays their abode: it is like the piping of a Quail, but somewhat deeper, and so loud, as to be heard at a great distance. It is repeated, at equal intervals, three, four, and often six times successively. The female is silent for some time after parturition, which is about the beginning of May. She produces six young-ones at a litter; towards which she exhibits great affection.

THE CALLING HARE.

These most harmless and inoffensive animals never go far from their holes; they feed and make their little excursions by night. They are easily tamed, and seldom attempt to bite, even when handled. The males, in confinement, are observed to attack one another, and they express their anger by a kind of grunting noise. They are natives of Russia.

THE CHINCHILLA.

From the various specimens of fur sent to this country it would appear that there are two species of the Chinchilla, but it is not certain. The length of the Chinchilla is about nine inches, exclusive of its tail, which measures about five.

GROUP OF CHINCHILLAS.

THE CHINCHILLA.

This pretty little animal is an inhabitant of the valleys in the mountain districts of South America. In such situations the cold is often very intense; but the long soft fur of the Chinchilla forms an effectual protection against the frosts. The fur is extensively used for clothing, and celebrated for its soft and warm texture. Numbers of these animals are

annually destroyed for the sake of their skins, and Coquimbo appears to be the place where they are taken in the greatest numbers.

The Chinchilla lives in society like the Rabbit, and resides in burrows dug in the ground. Its food is entirely vegetable, and principally consists of bulbous roots. In captivity it is quiet and inoffensive, but seems to betray no particular attachment to its keeper; neither does it seem playful. Its tail, covered with long bushy hairs, is usually held turned up over its back, like that of the Squirrel, and probably for the same reason.

THE LAGOTIS.

This animal, classed as one of the *Chinchillidæ*, resembles a Rabbit in size and general shape, but the tail, which is equal in length to the whole body, gives it a very different appearance. It is a jumping

THE LAGOTIS.

animal and has its hind legs nearly twice the length of the fore ones. The bristly hairs of its whiskers are thick and black. It has long ears, soft downy hair, long and beautiful. It is found in Chili.

PECORA.

THE animals belonging to this order have several wedge-like front teeth in the lower jaw, and none in the upper. Their feet have cloven hoofs. They live on vegetable food; and all the species ruminate, or chew their cud.

OF THE CAMEL TRIBE IN GENERAL.

IN the lower jaw of the Camel there are six front teeth, which are somewhat thin and broad. The canine teeth are at a little distance both from these and the grinders: in the upper jaw there are three, and in the lower two. The upper lip is cleft, or divided.

The disposition of the animals which constitute the present tribe, is in general so mild and inoffensive, that, when they are either bred in a state of domestication, or caught young and trained to labor, they become extensively serviceable to mankind. In hot and sandy regions they are employed as beasts of draught and burden. Their pace is usually slow; but, being able to sustain themselves, even on the longest journeys, with a very small portion of food, and to undergo fatigues which few, perhaps no other animals could endure, some of the species are an invaluable acquisition to the inhabitants of the district where they are found.

The number of species hitherto described is seven, of which only two are found on the old continent, the rest being confined to the alpine countries of Chili and Peru. In a wild state they are supposed to be gregarious, and to associate together in vast herds. The females

have each two teats, and seldom produce more than one young-one at a birth. The hair of these animals is of a soft and silky texture: and their flesh constitutes a palatable food.

Like all the other genera of their order, they are furnished with four stomachs, in consequence of which they not only live solely on vegetable food, but ruminate or chew the cud. They swallow their food unmasticated. This is received into the first stomach, where it remains some time to macerate; and afterwards, when the animal is at rest, by a peculiar action of the muscles, it is returned to the mouth in small quantities, chewed more fully, and then swallowed a second time for digestion.

THE ARABIAN, OR SINGLE-HUNCHED CAMEL.

The height of this animal, at the shoulder, is from five to seven feet. The hunch is situated on the middle of the back. The hair is soft, wooly, and very unequal; it is longer on the nape, under the throat, and on the hunch, than on any other parts of the body. Its color is usually somewhat of a reddish gray.

THE BACTRIAN, OR TWO-HUNCHED CAMEL.

The Bactrian Camel is distinguishable at first sight, from the last named species, by the two lumps on the upper part of its body; one of these is situated on the shoulders, and the other at a little distance behind. It is a somewhat larger animal than the Arabian Camel, and its legs are, in proportion, shorter.

The Arabian Camel is that, with a single hunch on its back, which we so frequently see exhibited in the streets of this country. In many parts of the east it is domesticated; and in carrying heavy burdens over the sandy deserts, it supplies a place which the Horse would not

be able to fill. The tough and spongy feet of these animals are peculiarly adapted to hot climates, for in the most fatiguing journeys they are never found to crack. The sand seems indeed their element; for no sooner do they quit it, and touch the mud, than they can scarcely keep upon their feet, and their constant stumbling in such situations is exceedingly dangerous to the rider. Their great powers of abstaining from water enable them to pass unwatered tracks of country for seven, eight, or, as Leo Africanus says, for even fifteen days, without requiring any liquid. They can scent water at half a league's distance, and, after a long abstinence, will hasten towards it long before their drivers perceive where it lies. Their patience under hunger is such, that they will travel many days fed only with a few dates, some small balls of barley-meal, or on the miserable thorny plants they meet with in the deserts. M. Denon informs us, that during his travels in Egypt, the Camels of his caravan had nothing in the day but a single feed of beans, which they chewed for the remainder of the time, either on the journey, or lying down upon the scorching sand, and this without their exhibiting the slightest indication of discontent.

ARAB AND CAMEL.

A large Camel will bear a load of a thousand or twelve hundred pounds, and, with this, it will traverse the deserts. When about to be loaded, these animals, at the command of their conductor, bend their knees. If any disobey, they are immediately struck with a stick, or their necks are pulled down; and then, as if constrained, and uttering their groan of complaint, they bend themselves, put their bellies on the earth, and remain in this posture till they are loaded and desired to rise. This is the origin of those large callosities on the parts of their bellies, limbs, and knees, which rest on the ground. If overburdened, the Camels give repeated blows with their heads, to the person who oppresses them, and sometimes utter the most lamentable cries.

They have a great share of intelligence, and the Arabs assert that they are so sensible of ill-treatment, that, when this is carried too far, the inflictor will not find it easy to escape their vengeance; and that they will retain the remembrance of an injury till an opportunity offers for gratifying their revenge. Eager, however, to express their

resentment, they no longer retain any rancour when once they are satisfied; and it is even sufficient for them to *believe* they have satisfied their vengeance. Accordingly, when an Arab has excited the rage of a Camel, he throws down his garments in some place near which the animal is to pass, and disposes them in such a manner, that they appear to cover a man sleeping under them. The animal recognises the clothes, seizes them in his teeth, shakes them with violence, and tramples on them in a rage. When his anger is appeased, he leaves them, and then the owner of the garments may make his appearance, and, without fear, may load and guide him as he pleases. "I have sometimes seen these animals, (says M. Sonnini,) weary of the impatience of their riders, stop short, turn round their long necks to bite them, and utter cries of rage. In these circumstances the man must refrain from striking his beast, as that would but increase his fury. Nothing can be done but to have patience, and endeavor to appease the animal by patting him with the hand, and, after a little while, he will resume his way and his place of himself." Like the Elephant, Camels have their periodical fits of rage, and during these they sometimes have been known to take up a man in their teeth throw him on the ground, and trample him under their feet.

LOADED C. MELS.

In eastern countries there is no mode of conveyance so cheap and expeditious as that by Camels. The merchants and other passengers unite in a caravan, to prevent the insults and robberies of the Arabs. These caravans are often very numerous, and are always composed of more Camels than men. In these commercial travels the march is not hastened: as the route is frequently seven or eight hundred leagues,

CAMELS OVERTAKEN BY THE SIMOOM.

the motions and journeys are regulated accordingly. The Camels only walk, and they travel thus from ten to twelve leagues a day. Every night they are unloaded, and allowed to pasture at freedom.

When in a rich country, or fertile meadow, they eat, in less than an hour, as much as serves them to ruminate the whole night, and to nourish them during the next day. But they seldom find such pastures, neither is this delicate food necessary for them. They seem to prefer wormwood, thistles, nettles, broom, cassia, and other prickly vegetables, to the softest herbage. As long as they find plants to browse, they easily dispense with water. This faculty of abstaining from the use of water, is an effect of their structure. Till very lately the Camels have been supposed to possess, independently of the four stomachs common to ruminating animals, a fifth bag, which served them as a reservoir for holding water. From a preparation, however, in the collection of Mr. John Hunter, it appears that this fifth bag never existed but in idea. The second stomach is of very peculiar construction, being formed of numerous cells several inches deep, having their mouths uppermost, and the orifices apparently capable of muscular contraction. When the animal drinks, it probably has a power of directing the water into these cells, instead of letting it pass into the first stomach, and when these are filled, the rest of the water will go into that stomach. In this manner a quantity of water may be kept separate from the food, and may serve occasionally to moisten it in its passage to the true stomach, for several days.

When travellers find themselves much in want of water, it is no uncommon thing to kill a Camel for what he contains, which is always sweet and wholesome.

"Of all animals (says M. de Buffon) that man has subjugated, the Camels are the most abject slaves. With incredible patience and submission, they traverse the burning sands of Africa and Arabia,

carrying burdens of amazing weight. The Arabians consider the Camel as a gift sent from Heaven; a sacred animal, without whose assistance they could neither subsist, traffic, nor travel. The milk of the Camel is their common food. They also eat its flesh; and of its hair they make garments. In possession of their Camels, they want nothing, and have nothing to fear. In one day they can perform a journey of fifty leagues into the desert, which cuts off every approach from their enemies. All the armies in the world would perish in pursuit of a troop of Arabs. By the assistance of his Camel, an Arab surmounts all the difficulties of a country which is neither covered with verdure, nor supplied with water. Notwithstanding the vigilance of his neighbors, and the superiority of their strength, he eludes their pursuit, and carries off with impunity all that he ravages from them. When about to undertake a predatory expedition, an Arab makes his Camels carry both his and their own provisions. When he reaches the confines of the desert, he robs the first passengers who come in his way, pillages the solitary houses, loads his Camels with the booty, and, if pursued, he accelerates his retreat. On these occasions he displays his own talents as well as those of the animals. He mounts one of the fleetest of them, conducts the troop, and obliges them to travel day and night, almost without either stopping, eating, or drinking; and, in this manner, he often performs a journey of three hundred leagues in eight days."

MILITARY CAMEL.

With a view to his predatory expeditions, the Arab instructs, rears, and exercises his Camels. A few days after their birth he folds their limbs under their belly, forces them to remain on the ground, and in this situation loads them with a weight, which is never removed but for the purpose of being replaced by a greater. Instead of allowing them to feed at pleasure, and drink when they are thirsty, he begins with regulating their meals, and makes them gradually travel long journeys, diminishing at the same time the quantity of their aliment. When they acquire some strength they are trained to the course, and their emulation is excited by the example of Horses, which, in time, renders them not only fleet, but more robust than they would otherwise be.

The saddle used by the Arabs is hollowed in the middle, and has, at each bow, a piece of wood placed upright, or sometimes horizontally, by which the rider keeps himself on his seat. This, with a long pocket, to hold provisions for himself and his beast, a skin of water for the rider, (the animal being otherwise well supplied,) and a

CARAVAN.

leather thong, are the whole of the equipage that the Arab traveller stands in need of, and with nothing more than these he is able to cross the deserts.

The pace of the Camel being a high trot, M. Denon says, that when he first mounted one of these animals, he was greatly alarmed lest this swinging motion would have thrown him over its head. He, however, was soon undeceived; for on being once fixed in the saddle, he found that he had only to give way to the motion of the beast, and then it was impossible to be more pleasantly seated for a long journey, especially as no attention was requisite to guide the animal, except in making him deviate from his proper direction. "It was (he remarks) entertaining enough, to see us mount our beasts: the Camel, as soon as the rider leans on his saddle, preparatory to mounting, rises very briskly, first on his hind and then on his fore legs, thus throwing the rider first forward and then backward; and it is not till the

ARABIAN CAMEL.

ARABIAN ENCAMPMENT.

fourth motion that the animal is entirely erect, and the rider finds himself firm in his seat. None of us were able for a long time to resist the first shake, and we had each to laugh at his companions.

When the traveller is not in haste, or when he accompanies a caravan, the progress of which is always slow, on account of the Camels of burden, a kind of covered litter is fixed on one of these animals, in which he is tolerably at his ease, and where he may even sleep if he chooses. The drivers of the loaded Camels have each a stick, which they use sparingly, if occasion requires; and those who ride, whip their animals with a long strap of leather, at the same time urging them forward by a clicking noise of the tongue.

FEMALE ARABIAN CAMEL.

It has been attempted, but without success, to introduce Camels,

both of the Arabian and Bactrian species, into the West India islands The people were unaccustomed to their habits and manner of feeding; and this, together with the insects called chigoes, insinuating themselves into their soft feet, and producing inflammations, and at length painful ulcers, seems to have rendered them totally unfit for service. Similar efforts have been made to introduce them into the southern United States, and there is every prospect of success in acclimating them in this country.

The Arabian Camels are natives chiefly of the deserts of Asia and Africa. The Bactrian species are found, at the present day, in the same places where they were observed by the ancients; namely, in Usbec Tartary, the ancient Bactria. They are likewise natives of Thibet, and of countries near the frontiers of China.

THE BACTRIAN CAMEL.

The Bactrian Camels are employed as beasts of burden throughout all the regions where they are found. They are capable of supporting even the rigorous climate of the environs of the lake Baikal in Siberia, where they subsist, during the winter, on the bark and tender branches of the trees. They are, in every respect better adapted for living in temperate climates than the Arabian Camels, for they experience much less injury, from humid and marshy countries, than these.

The flesh of the Camel is dry and hard, but not unpalatable. It is so much esteemed by the inhabitants of Egypt, that in Cairo and Alexandria, it was, not long ago forbidden to be sold to the Christians.

THE CAMEL.

In Barbary, the tongues are salted and smoked, for exportation to Italy and other countries, and they form a palatable food. The hair is an important article of commerce, serving for the fabrication of the tents and carpets of the Arabs; and leather is made of the skin. In the *materia medica* of China, the different parts of the Camel occupy a conspicuous place: the fat is called the oil of bunches; and the flesh, the milk; the hair, and even their dung, are admitted into the prescriptions of the Chinese physicians.

THE LLAMA, AND THE VICUNA.

THE LLAMA.

The Llama is about four feet and a half in height, and, in length, from the neck to the tail, nearly six feet. Its usual weight is about three hundred pounds. The back is nearly even, and, instead of a hunch there, the animal has a protuberance on the breast. The head is small, with fine black eyes, and the neck is very long and arched. The general shape is that of a Camel, without the dorsal protuberance. In a wild state the hair of the Llama is long and coarse; but when domesticated, it becomes short and smooth. The color is white gray, and russet, disposed in spots.

The Vicuna is somewhat smaller than the Llama; and its limbs are more neatly formed. There is no protuberance on the breast. The color of the upper parts of the body is reddish brown, and of the under parts whith.

THE LLAMA.

The lofty and mountainous regions of Peru, Chili, and other districts of South America, are inhabited both by the Llama and Vicuna. They are mild, gentle, and tractable animals, and are employed in many parts of these countries for the carrying of burdens. In the Spanish settlements, before the introduction of Mules, they were employed in the ploughing of land. Both the Llama and the Vicuna go on their journeys with great

gravity, and nothing can induce them to change their pace. Like the Camel, they lie down to be loaded; and, when they are wearied, no blows will induce them to proceed. Their disposition is indeed so capricious, that, sometimes, when they are struck they lie down, and caresses only will induce them again to rise. When provoked, they have no other mode of avenging themselves but by spitting, and they have the faculty of ejecting their saliva to a considerable distance. It is asserted, though without foundation, that this is of so corrosive a quality, that it will produce blisters upon the skin. The saliva of a Llama, which was exhibited in Piccadilly in the year 1805, I received on my hand, and the keeper informed me that he had several times had it thrown even upon his face, without injury.

WILD LLAMAS.

THE VICUNA.

Llamas are employed in transporting the rich ores out of the mines of Potosi. In their journeys, they will sometimes travel four or five days successively before they seem desirous of repose; and they then rest spontaneously twenty or thirty hours before they resume their toil. Sometimes, when they are inclined to rest a few minutes only, they bend their knees, and lower their bodies with great care, to prevent their load from falling off, or being deranged: when, however, they hear their conductor's whistle, they rise with equal caution, and proceed on their journey. In going along during the day-time, they browse wherever they find herbage, and generally spend the night in chewing their cud. If, after they are determined not to rise

their masters continue to abuse them, they sometimes kill themselves in their rage, by striking their heads alternately from right to left on the ground.

WHITE LLAMAS.

When these animals are among their native mountains, they associate in immense herds in the highest and steepest parts. Here they frequently climb rocks, along which no man would dare to follow them; and while the rest of a herd feed, one of them is always stationed as a sentinel on the point of some adjacent rock. When this animal observes any one approach, he gives a kind of neigh, and the herd, taking the alarm, run off with incredible speed. They gallop to a considerable distance, then stop, turn round, and gaze at their pursuers till they come near, and immediately set off again. They out-run all the Dogs, so that the inhabitants have no other mode of killing them than with guns.

GROUP OF LLAMAS.

The Llama which I saw in London in 1805, was supposed to have been at that time about eight months old. It had been taken in one of the Spanish ships which had fallen a prize to our seamen. No animal could, apparently, be more tame or docile; but it was easily irritated, and on such occasions always ejected its saliva on the offender. It seemed to bear our climate remarkably well.

GUANACO.

The Guanaco is a variety of the Llama. They are found in the southern parts of the Andes. When full grown it is nearly as large as a Horse. The hair is yellowish above and white below, the head rounded, ears straight, muzzle pointed, tail short. It is found wild in very large herds in the interior of Aroucano.

THE ALPACA.

ALPACA.

The Alpaca has given its name to a kind of cloth fabric made of its wool. The Alpaca is of a maroon brown color varied above with black, and below with white. The hair along the back is long and silky, and almost as fine in the staple as that of the Cashmere Goat. It is easily tamed and is mild and docile in temper. Several specimens have thriven well in Europe; and it should be introduced into the United States on account of its value in the manufacture of the Alpaca cloth.

OF THE MUSK TRIBE IN GENERAL.

THE MUSK DEER.

In the lower jaw they have eight front teeth; and in the upper jaw two long tusks, one on each side, which project out of the mouth.

The Musk animals are inhabitants, almost exclusively, of India and the Indian islands. Two or three of the species are so exceedingly small, as scarcely to exceed a Rabbit in size. They are very gentle, but excessively timid: on the appearance of a man they fly with precipitation into the recesses of their native wilds. Like the Camels, they have no horns.

THE THIBETIAN MUSK

This species is destitute of horns. The ears are somewhat large, the neck is thick, and the hair on the whole body long, upright, and thick set. Each hair is undulated, the tip ferruginous, the middle black, and the bottom cinereous. The limbs are slender, and of a black color; and the tail is so short as to be scarcely visible. The

THE MUSK DEER.

length of the male is about three feet, and that of the female about two feet and a quarter; and their average weight is from twenty-five to thirty pounds.

These animals live retired among the highest and rudest mountains of Thibet, and some other parts of Asia. In the autumn, large flocks of them collect together for the purpose of migration southward, in consequence of the approaching cold. During this migration the peasants lie in wait for them, and either catch them by means of snares, or kill them with arrows and bludgeons. At these times they are often so meagre and languid, from hunger and fatigue, as to be taken without much difficulty; for they have no weapons of defence except their tusks. Their activity is very great, and they are able to take astonishing leaps over the tremendous chasms of the rocks. They tread so lightly on the snow, as scarcely to leave a mark; while the Dogs that are employed in the pursuit of them sink in, and are frequently obliged to desist from the chase. In a state of captivity they live but a short time.

In an oval receptacle, about the size of a small egg, is contained the well-known drug called *musk*. This hangs from the middle of the abdomen, and is peculiar to the male animal. A full-grown male will yield a drachm and a half, and an old one two drachms. The bag is furnished with two small orifices, the one naked and the other covered with oblong hairs. Gmelin states, that, on squeezing this bag, he forced the musk through the apertures, in the form of a brown fatty matter. The hunters cut off the bag and tie it up for sale, but often adulterate its contents by mixing them with other matter to increase the weight. The musk is even sometimes taken entirely out, and a composition of the animal's blood and liver (for this drug has much the appearance of clotted blood) is inserted in its stead; but when the bags are opened, the imposition may be imme-

diately detected. The deceit, however, most commonly practised, is that of putting into the bags little bits of lead, in order to augment the weight.

It is generally asserted, that when the musk-bag is first opened, so powerful an odour comes from it, that every person present is obliged to cover his mouth and nose with several folds of linen; and that notwithstanding this precaution, the blood will frequently gush from the nose. When the musk is fresh, a very small quantity of it in a confined place is insupportable; it causes giddiness in the head, and hemorrhages which have sometimes proved fatal.

Besides being of use on account of the musk they produce, the skins of these animals, in many of the countries where they are found, are used as winter-clothing. The Russians scrape off the hair, and have a method of preparing the leather so as to render it as soft and shining as silk; and this leather they adopt as part of their summer-dress.

These animals are found, in Eastern countries, in such numbers, that M. Tavernier informs us, he collected, in one journey, no fewer than seven thousand six hundred and seventy three musk-bags

NAPU CHEVROTAIN.

The Chevrotains, a beautiful group of small animals are classed with the Musk Deer. There are three species, viz: 1. The Meminna is eighteen inches in length, found in Ceylon, olive gray, dappled with white. 2. The Napu Chevrotain and the Karchil, both smaller than the Meminna, not larger, indeed than a common Hare, are found in Java. The Napu Chevrotain is a most delicate and beautiful little animal, brown above and white below, naked muzzle, short tail, very slender legs, mild and gentle in captivity but indolent and only interesting from its surpassing beauty.

OF THE DEER IN GENERAL.

THESE animals have eight front teeth in the lower jaw. In general they are destitute of canine teeth; but in some of the species a single canine tooth is found on each side of the upper jaw.

This is an active tribe, inhabiting, principally wild and woody regions. In their contentions, both among each other and with the rest of the brute creation, these animals not only use their horns, but also strike furiously with their fore feet. Some of the species are employed by mankind as beasts of draught. The flesh of the whole tribe is wholesome; and that of some of the kinds, under the name of venison, is accounted particularly delicious.

The horns, which are only found on the heads of the males, are solid and branched. They are renewed every year; and, while young, are covered with a skin which is extremely vascular, and clothed with a fine velvety fur, that dries, shrivels, and falls off when the horns have attained their full size.

THE ELK, OR MOOSE-DEER.

This animal is generally larger than the Horse, both in height and bulk. The legs are long, the body is round, the neck short, and the head and ears are long. The hair of the male is black at the points, cinerous in the middle, and at the roots perfectly white. That of the female is of a sandy brown, but whitish under the throat, belly, and flank. The upper lip is square, very broad, deeply furrowed, and hangs much over the mouth; the nose is broad, and the nostrils are large and wide. The horns, which are found only on the males, have no brow-antlers, and the palms are extremely broad. They are shed annually; and some have been seen that weighed upwards of sixty pounds.

THE ELK, OR MOOSE DEER.

The legs of Elks are so long, and their necks so short, that they cannot, like other animals, graze on level ground, but are obliged to browse the tops of large plants, and the leaves or branches of trees. In all their actions and attitudes they appear very uncouth; and, when disturbed, never gallop, but escape by a rapid kind of trot. In their common walk they lift their feet very high, and they are able, without difficulty, to step over a gate five feet in height.

Their faculty of hearing is supposed to be more acute than that either of their sight or scent. It is consequently extremely difficult to kill them in the summer-time; and the Indians have then no other method of doing this, than by creeping after them among the trees and bushes, till they get within gun-shot. In winter, however, when the snow is so hard frozen as to allow the natives to go upon it in their snow-shoes, they are able frequently to run the animals down; for the slender legs of the Elks break through the snow at every step, and plunge them up to the belly. They are so tender-footed, and so short-winded, that a good runner will generally tire them out in less than a day.

In summer-time the Elks frequent the margins of rivers and lakes, getting into the water in order to avoid the innumerable multitudes of musquitoes, and other flies that pester them during that season. They are often killed by the Indians while they are crossing rivers, or swimming from the main land to islands. When pursued in these situations, they make no resistance whatever. The young-ones are so simple, that, in North America, Mr. Hearne has seen an Indian paddle his canoe up to one of them, and take it by the poll without the least opposition; the poor harmless animal seeming, at the same time, as contented along-side the canoe, as if it were swimming by the side of its dam, and looking up in the faces of those who were about to be-

HUNTING THE MOOSE DEER.

come its murderers with the most fearless innocence; using its fore-feet, almost every instant, to clear its eyes of the numerous musquitoes which alighted upon it.

The Elks are the easiest to tame and domesticate of any animals of the Deer kind. They will follow their keeper to any distance from home; and, at his call, will return with him, without the least trouble, and without ever attempting to deviate from the path.

An Indian, at the Factory at Hudson's Bay, had, in the year 1777, two Elks, so tame, that, when he was on his passage to Prince of Wales' Fort, in a canoe, they always followed him along the bank of the river; and at night, or on any other occasion, when he landed, they generally came and fondled on him, in the same manner as the most domestic animal would have done, and never attempted to stray from the tents. He did not, however, possess these animals long; for he one day crossed a deep bay in one of the lakes, in order to save a very circuitous route along its bank, and expected the creatures would, as usual, follow him round: but, unfortunately, at night they did not arrive; and as the howling of wolves was heard in the quarter where they were, it is supposed they had been devoured by those voracious beasts, for they were never afterwards seen.

M. D'Obsonville had a Moose-deer in his possession, while in the East Indies. He procured it when only ten or twelve years old, and kept it about two years without ever tying it up. He even let it run abroad, and sometimes amused himself with making it draw in the yard, or carry little burdens. It always came when called, and he found few signs of impatience, except when it was not allowed to remain near him. When he departed from the island of Sumatra, he

MOOSE DEER PURSUED BY BEARS.

gave it Mr. Law of Lauriston, the governor-general, an intimate friend. This gentleman sent it to his country-house, where, being kept alone and chained, it became so furious as not to be approached without danger: even the person who every day brought its food was obliged to leave this at some distance. "After some months' absence (says M. D'Obsonville) I returned: it knew me afar off, as I observed by the efforts it made to get to me. I ran to meet it; and never shall I forget the impression which the caresses and transports of this faithful animal made upon me."

A successful attempt has been made at New York to render the Elk useful in agricultural labor. Mr. Livingston, the president of the New York Society, had two of these animals broken to the harness. Though they had only been twice bitted, and were two years old, they appeared to be equally docile with colts of the same age. They applied their whole strength to the draught, and went on a steady pace. Their mouths appeared very tender, and some care was necessary to prevent them from being injured by the bit. If, upon trial, it be found that the Elk can be rendered useful in harness, it will be a considerable acquisition to the Americans. As the trot of these animals is very rapid, it is probable that, in light carriages, they would out-travel the horse. They are also less delicate in their food than that animal, and will become fat on hay only. They are long-lived, and more productive than any beast of burden.

The Indians have a superstitious notion that there is an Elk of such an enormous size, that eight feet in depth of snow is no impediment to

INDIANS HUNTING THE MOOSE DEER WITH SNOW SHOES.

its walking; that its hide is proof against weapons of every description, and that it has an arm growing out of its shoulder, subservient to the same purposes as ours. They say also that this imaginary animal is attended by a vast number of other Elks, which form his court, and render him every service that a sovereign can require of them. The Indians esteem the Elk an animal of good omen, and believe that to dream of it often is an indication of long life.

When suddenly roused and endeavoring to make its escape, the Elk is observed at times to fall down, as if deprived for some moments of motion. Whether this be owing, as frequently has been imagined, to an epileptic fit, or whether it only arises from fear, it is not, perhaps, easy to determine. The circumstance, however, has given rise to the popular superstition of attributing to the hoofs of the Elk the virtues of an anti-epileptic medicine: and the Indians even imagine that the animal has the power of curing itself of its own disorder, or at least of preventing an approaching fit, by scratching its ear till it draws blood.

THE MOOSE DEER.

The flesh of the Elk is good; but the grain is coarse, and it is much tougher than any other kind of venison. According to Mr. Pennant, the tongues are excellent, and the nose is so like

marrow, as to be esteemed the greatest delicacy produced in Canada. The skins make excellent tent-covers and shoe-leather.

These animals inhabit the forests of Europe, America, and Asia, as far as Japan. The females generally produce their young-ones, from one to three in number, towards the end of April or the beginning of May.

THE REINDEER.

The Reindeer is found in most of the northern regions of Europe, Asia, and America. Its general height is about four feet and a half. The color is brown above and white beneath; but, as the animal advances in age, it often becomes of a grayish white. The space about the eyes is always black. The hair on the under part of the neck is much longer than the rest. The hoofs are long, large, and black. Both sexes are furnished with horns, but those of the male are much the largest. These are long slender, and branched; furnished with brow antlers, having widely-expanded and palmated tips, directed forwards.

THE REINDEER.

To the Laplanders this animal is the substitute for the Horse, the Cow, the Goat, and the Sheep; and is their only wealth. The milk affords them cheese; the flesh, food; the skin, clothing; of the tendons they make bow-strings, and, when split, thread; of the horns, glue; and of the bones, spoons. During the winter the Reindeer supplies the want of a horse, and draws sledges with amazing swiftness over the frozen lakes and rivers, or over the snow, which at that time covers the whole country.

REINDEER AND SLEDGE.

With a couple of Reindeer yoked to a sledge, it is said that a Laplander is able to travel one hundred and twelve English miles in a day. The Laplanders say, that they can thrice change the horizon in twenty-four hours; that is, they can three times pass that object, which, at their setting out, they saw the greatest distance their eyes could reach.

The sledge is formed somewhat like a boat, having a back-board in it for the rider to lean against. Its bottom is convex, and none but a person well practised in such a mode of travelling can preserve himself a moment from being overset. It is square behind, but projects to a point before. The traveller is tied in it like a child in a cradle. He manages his carriage with great dexterity, by means of a stick with a flat end, to remove stones or any obstructions he may meet with. To the peak in front a thong is fixed, which yokes the Reindeer. The bit is a piece of narrow leather, tacked to the reins of the bridle over the animal's head and neck; and from the breast a leathern strap, passing under the belly, is fastened to the front part of the sledge.

Before the Laplander enters the sledge he puts on his gloves, afterwards he places himself in it, taking the rein or halter fastened to the Reindeer's head, and tying it about his right thumb. In the mean time the Deer stands still, and the rein hangs on the left side. When the man is ready to set off, he shakes the rein with violence from side to side, and the animal springs forward with great speed. The driver directs the course of the Deer, which is irregular and serpentine, by pulling the rein on the side he would have him go; and encourages him with his voice. It is for this purpose that the love-songs of the Laplanders are in general composed; and among these are found some beautiful specimens of the poetry of a rude and uncivilized nation.

It must appear wonderful that the Laplanders should be able to travel in winter, by night as well as by day, when the earth presents one entire surface of snow, and not a single vestige is discoverable of human industry to direct their way, the snow at the same time flying about in all directions, and almost blinding them: yet it is certain that they have no difficulty to find the spot to which they are bound, and very rarely meet with any accident. They fix bells to the harness of the Reindeer, in order that they may be kept together by hearing, when they cannot see one another, after the light of their short day fails them. To guide them in their route, the Laplanders observe the quarter from which the wind blows, and at night are directed by the stars. The missionary *Leems*, who resided ten years among this people, remarks, that during the whole of that time he did not remember more than one fatal accident having happened from this mode of travelling.

A rich Laplander is often possessed of a herd of more than a thousand Reindeer. In autumn these seek the highest hills, in order to avoid the Lapland Gad-fly. The skins of the Reindeer, after they are killed, are sometimes found to be as full of holes as a sieve, from the operations of these insects, which, at that time, deposits its eggs in their skins. This insect is the pest of the Reindeer, and numbers die that are thus visited. The moment a single fly appears, the whole herd instantly perceive it; they fling up their heads, toss about their horns, and at once attempt to fly for shelter amidst the snows of the loftiest mountains. In summer they feed on several kinds of plants; but during winter on the Reindeer liverwort, to get at which, as it lies far beneath the snow, they dig with their feet and antlers. It is,

therefore, a most kind dispensation of Providence, that, in the Deer, the only tribe living among snows, most of the females should be furnished with horns, the more readily to provide themselves with food. But besides this there is another lichen, that hangs on the Lapland pine-trees, and which affords sustenance to the Reindeer when the snows are too deep for them to reach their usual food. In severe winters, when the snow is impenetrably frozen, the boors frequently cut down some thousands of these moss-clad trees, for the support of their herds.

During the summer these animals lose their vigor and swiftness, and are soon overcome by the heat. Mr. Consett saw many of them reclining in the woods, and apparently so enfeebled as scarcely to be able to move out of the way. When thus oppressed, they frequently make a noise like the grunting of a hog.

Besides the Gad-fly, the Reindeer have several other enemies, the chief of which are Bears and Wolves; but unless they are taken by surprise, or are attacked when their horns are newly shed, they are able to defend themselves against the attacks of these animals, and even entirely to drive them away.

The Reindeer are able to swim with such incredible force and swiftness across the widest rivers, that a boat with oars can scarcely keep pace with them. They swim with their bodies half above water, and will pass a river or a lake even in the coldest weather.

All persons who have described the Reindeer have noticed a cracking noise which they make when they move their feet. This has been attributed to the animals separating and afterwards bringing together the divisions of the hoofs. As the Reindeer inhabit a country generally covered with snow, such a construction of their hoofs is admirably adapted to the surface they have most commonly to tread, as it prevents them from sinking too deeply into it.

Pontoppidan tells us, that "the Reindeer has over his eye-lids a kind of skin, through which it peeps, when otherwise, in hard showers of snow, it would be obliged to shut its eyes entirely." He, however, seems to have mistaken this for, probably, a breathing-hole, somewhat similar to that near the eye of the Fallow Deer, and some of the species of Antelope.

The Reindeer cast their horns annually. The rudiments of the new horns are at first covered with a kind of wooly membrane, which the creature, after some time, rubs off. They also change their hair every spring, during which time they are lean, and of little use. The female begins to breed at the age of two years, goes with young eight months, and generally brings forth two at a time. The fondness of the dam for her offspring is very remarkable. They follow her two or three years, but do not acquire their full strength until four. It is at this age that they are trained to labor; and they continue serviceable for four or five years. They seldom outlive the age of fifteen or sixteen.

In Siberia, where they are extremely numerous, these animals meet with a more rough and savage usage than their fellows experience from the harmless Laplanders. In the woody districts, where springes, fire-arms, and spring-guns can be applied, the natives resort to such,

for either the taking or killing of this harmless animal: but in open plains, where these contrivances would fail, many other means have been invented. Those adopted by the Samoydes seem the most common.

These people go out in parties for the purpose of killing Reindeer; and when they perceive a herd, they station several tame Reindeer, which they bring with them, on an elevated plain to the windward. Then, from this place to as near the savage herd as they can venture to come without alarming them, they put into the snow long sticks, at small distances, and to each of them tie a goose's wing, which flutters about freely with the wind. This being done, they plant similar sticks and pinions on the other side, under the wind; and the Reindeer being busy with their pasture beneath the snow, and being chiefly guided by their scent, generally observe nothing of these preparations. When every thing is ready, the hunters separate; some hide themselves behind their snowy entrenchments, while others lie with bows and other weapons in the open air to the leeward; and others again go to a distance, and drive, by a circuitous route, the game between the terrific pinions. Scared by these, the wild Reindeer run directly to the tame ones, which are standing by the sledges; but here they are alarmed by the concealed hunters, who drive them to their companions that are furnished with arms, and these immediately commit terrible slaughter among them.

If it happen that a savage herd are feeding near a mountain, the hunters hang up their clothes on stakes about the foot of the mountain, making also, with the same frightful pinions, a broad passage towards it, into which they drive the game. As soon as they are come into this path, the women go with their sledges directly across the further end of it, shutting the Reindeer in; these immediately run round the mountains, and at every turn are fired at by the hunters.

Sir Henry George Lyddell, Bart., brought with him from Lapland, in the year 1786, five Reindeer, which he kept at his seat of Eslington Castle, in Northumberland. They bred, and there was every prospect that they would succeed and even become prolific; but, unfortunately, some of them were killed, and others died in consequence of a disorder similar to that called the *rot* in sheep, supposed to have been occasioned by the richness of the grass on which they fed.

THE RED DEER.

The height of these animals at the shoulder, is about three feet and a half. The males only are horned; and the horns, which are much branched, are rounded through their whole length. The general color of the hair is reddish brown on the upper, and white on the under parts of the body.

The elegance and beauty of this animal have always been much admired. Red Deer are natives of many parts of Europe, and are supposed to have originally been introduced into England from France. About a century back, however, they were found in a state of nature

in many of the wild and mountainous parts of Wales; and Stags are sometimes seen in a wild state, even now, in the forests of Exmoor, in Devonshire, and the woods on the Tamar. There is here an annual Stag-hunt, under the patronage of the Ackland family. Mr. Stackhouse, of Pendarvis in Cornwall, informs me, that he once saw a wild Hind that had been killed near Launceston. Red Deer are also still occasionally found in the Highlands of Scotland.

THE RED DEER.

These animals live in herds of many females and their young, headed by one male. They frequent the forests, browsing on grass, or the leaves and buds of various trees.

The males only have horns, and these are always shed in the spring. During the first year, the young animals have no horns, but only a rough excrescence, covered with a thin, hairy skin, in place of them. In their second year the horns are straight, and without branches; during the following year they acquire two antlers or branches; and they generally have an additional one every year till their sixth, from which time the animals may be considered at maturity. When the Stag sheds his horns, he seeks the most retired places, and feeds only during the night; for otherwise the flies settle on the soft skin of the young horns, which is exquisitely tender, and keep the animal in continual torture. The place of the horn is, for a little time, occupied by a soft tumor full of blood, and is covered with a downy substance like velvet. This increases daily, and, at length, the antlers shoot out. The horns of the Stag are round through their whole length: this constitutes a distinguishing characteristic between them and the horns of the fallow Deer; the latter, where they branch off, being flatted for the breadth of more than a hand.

OLD STAG.

The sense of smelling and hearing are, in this animal, remarkably acute. On the slightest alarm he lifts his head, erects his ears, and stands for a few minutes as if in a listening posture. Whenever he ventures upon unknown ground, or quits his native coverts, he first stops at the skirts of the plain to examine all round; he next turns

against the wind, to examine by the smell if there be any enemy approaching. If a person happen to whistle or call out at a distance, the Stag is seen to stop short, in his slow, measured pace, and to gaze upon the stranger with a kind of awkward admiration: if the cunning animal perceive neither dogs nor fire-arms preparing against him, he goes slowly forward, unconcerned, and does not attempt to run away. Man is not the enemy he is most afraid of; on the contrary, he seems to be delighted with the sound of the shepherd's pipe; and the hunters sometimes make use of that instrument to allure the animal to its destruction.

THE DOE.

When a herd of Deer have to pass a wide river, which they are able to do without much difficulty, they are said to rest their heads on each other's rumps. If the leader becomes fatigued, he retreats to the rear, and suffers the next in succession to take his place. They swim with so much ease, that a male has been known to venture out to sea in search of females, and to cross from one island to another, although at a distance of some leagues.

DOE AND YOUNG.

The Stag is very delicate in the choice of his pasture. When he has eaten a sufficiency he retires to the covert of some thicket to chew the cud in security. His voice becomes stronger, louder, and more tremulous, as he advances in age; and, during the rutting time, it is even terrible. At this season he seems so transported with passion, that nothing can obstruct his fury; and, when at bay, he keeps off the dogs with great intrepidity. Some years ago the duke of Cumberland caused a Tiger and a Stag to be enclosed in the same area; and the Stag made so bold and furious a defence, that the tiger was at length obliged to give up the contest.

The natives of Lousiana hunt these animals both for food and as an amusement. This is sometimes done in companies, and sometimes alone. The hunter who goes out alone, furnishes himself with the dried head of a Stag, having part of the skin of the neck attached to it. This, a gun, and a branch of a tree or piece of a bush, are all that he has need of. When he approaches any of the wild Deer, he hides himself behind the bush, which he carries in his hand, and advances gently till he is within shot. If the animal appears alarmed, the hunter immediately counterfeits the Deers' calls to each other, and holds the head just above the bush: then lowering it towards the ground, and lifting it by turns, he so deceives the Stag by the appearance of a companion, that the animal seldom fails to come towards it; in which case the hunter fires into the hollow of his shoulder, and lays him dead on the spot.

THE STAG.

When hunters go in large parties, they form a wide crescent round one of these animals, the points of which may be half a mile asunder. Some of them approach the Stag, which runs affrighted to the other side; where finding them on that part advancing, he immediately rushes back again. Thus he is driven from side to side, the crescent closing into a circle, and gradually approaching, till at length he is so much exhausted, that he quietly submits to be taken alive. It sometimes happens, however, that he has sufficient strength left to stand at bay; in which case he is seized from behind, but seldom in this case before some one is wounded. This mode of hunting is merely adopted as a recreation, and is called "the dance of the Deer."

DOE SUCKLING FAWN.

The poet Thomson has left us a most animated description of the hunting of this animal in England.

> The Stag, too, singled from the herd, where long
> He ranged, the branching monarch of the shades
> Before the tempest drives. At first, in speed,
> He, sprightly, puts his faith; and roused by fear,
> Gives all his swift aerial soul to flight.
> Against the breeze he darts, that way the more
> To leave the lessening murderous cry behind.
> Deception short! though fleeter than the winds
> Blown o'er the keen-air'd mountains by the north,
> He bursts the thickets, glances through the glades,

And plunges deep into the wildest wood.
If slow, yet sure adhesive to the track
Hot streaming, up behind him come again
Th' inhuman rout, and from the shady depth
Expel him, circling through his every shift.
He sweeps the forest oft; and sobbing sees
The glades, mild opening to the golden day;
Where, in kind contest with his butting friends,
He wont to struggle, or his love enjoy.
Oft in the full-descending flood he tries
To lose the scent, and lave his burning sides;
Oft seeks the herd: the watchful herd, alarm'd
With selfish care avoid a brother's woe.
What shall he do? His once so vivid nerves,
So full of buoyant spirit, now no more
Inspire the course; but fainting breathless toil,
Sick, seizes on his heart; he stands at bay:
And puts his last, weak refuge in despair.
The big round tears run down his dappled face
He groans in anguish; while the growling pack
Blood happy, hang at his fair-jutting chest,
And mark his beauteous chequer'd sides with gore.

HUNTING IN THE HIGHLANDS.

The Highland chiefs of former days were accustomed to hunt Red Deer with all the magnificence of Eastern monarchs. They sometimes assembled four or five thousand of their clan, who drove the Deer into toils, or to the station where the lairds had placed themselves: but as this was frequently made only a pretence to collect their vassals for rebellious purposes, an act of parliament was passed, which prohibited any assemblages of this nature.

Much has been said of the extreme long life of the Stag, and many wonderful stories have been related by naturalists respecting it; but there is reason to suppose that this animal does not often reach the age of fifty years.

The females generally bring forth only one young-one at a time, and this about the end of May or beginning of June. They take care to hide their offspring in the most obscure thickets, for almost every creature is then a formidable enemy: the Eagle, the Falcon, the Osprey, the Wolf, the Dog, and all the rapacious family of the cat-kind, are in continual employment to find out the retreat. But, what seems most unnatural, the Stag himself is an enemy, and the female is obliged to use all her arts to conceal her young-one from him, as from the most dangerous of her pursuers. At this season, therefore, the courage of the male seems transferred to the female: she defends it against her less formidable opponents, by force; and when pursued by the hunter, she even offers herself, to mislead him from the principal object of her concern: she will fly before the hounds for many hours, and will then return to her young-one, whose life she has thus preserved at the hazard of her own.

THE FALLOW DEER.

The Fallow Deer is smaller than the Stag, of a brownish bay color, whitish beneath, on the insides of the limbs, and beneath the tail. The horns, which are peculiar to the male, are very different from those of the Stag: they are not branched, but are broader towards the upper part, and are divided into processes down the outside. A simple antler rises from the base of each, and a similar one at some distance from the first.

THE FALLOW DEER.

These animals associate in herds, which sometimes divide into two parties, and maintain obstinate battles for the possession of some favorite part of a park: each party has its leader, which is always the oldest and strongest of the

flock. They attack in regular order of battle; they fight with courage, and mutually support each other; they retire, they rally, and seldom give up after one defeat. The combat is frequently renewed for many days together; till, after several defeats, the weakest party is obliged to give way, and leave the conquerors in possession of the object of their contention.

The Fallow Deer is easily tamed, and it feeds upon numerous vegetables which the Stag refuses. When these animals drink, they plunge their noses, like some horses, very deep under water, and continue them in that situation for a considerable time; but, to obviate any inconvenience which that may occasion, says the Rev. Mr. White, in his Natural History of Selborne, they can open two vents, one at the inner corner of each eye, which have a communication with the nose. Here seems to be an extraordinary provision of nature worthy of our attention; for it appears as if these creatures would not be suffocated, though both their mouth and nostrils were stopped. This curious formation of the head may be of singular service to beasts of chase, by affording them free respiration: and no doubt these additional nostrils are thrown open when they are hard run. To this account, which was addressed in a letter to Mr. Pennant, that gentleman has thus replied: "I was much surprised to find in the *Antelope* something analagous to what you mention as so remarkable in Deer. This animal also has a long slit beneath each eye, which can be opened and shut at pleasure. On holding an orange to one, the creature made the same use of those orifices as of his nostrils; applying them to the fruit, and seeming to smell it through them."

THE FALLOW DEER REPOSING.

The females produce one, sometimes two, and rarely three young-ones at a time. These arrive at perfection in three years, and live to the age of about twenty.

THE ROE.

The height of the Roe at the shoulders is about two feet and a half. The horns are six or eight inches in length, strong, upright, rugged, and divided towards their extremity into three points or branches. The face is dark, and the spaces bordering on the mouth and eyes are black. In summer the hair is short and smooth, and of a bright reddish color on the upper parts of the body; but in winter it is long and thick. The chest, belly, and insides of the thighs are white.

The figure of the Roe is more elegant than that of either of the preceding kinds of Deer; and its vivacity of disposition and gracefulness of motion are scarcely to be exceeded. When pursued by the hunter, the Roebuck exhibits infinite fleetness and address.

It is scarcely possible to hunt him down; since he can continue the course for many hours without exhaustion. He is, therefore, seldom to be caught, except by surprise in the onset. When, however, he finds his first efforts to escape are likely to prove unsuccessful, he returns, and keeps the same track backward and forward, until, by various turnings and windings, he totally confounds the scent. Then, by one enormous bound, he is said to leap aside, lie flat on his belly among bushes or long grass, and suffer the dogs to pass close by his nose without offering to move.

THE ROE.

In their wild state, the Roes generally love to range among the hills and in alpine valleys, near the borders of woods, into which they can fly for shelter and security whenever they are pursued by their foes. They do not, like the Red and Fallow Deer, herd together in vast numbers; and they are seldom to be found but in small flocks or families, consisting of the two parents and their offspring, or, in the whole, of only from three to five individuals. They seldom or never allow strangers to intermix or associate with them. During the summer months they feed chiefly on grass, but they are likewise fond of the *stone bramble;* and in winter, when the ground is covered with snow, they browse on the tender branches of the fir and birch-trees.

The period of gestation in these animals is about five months and a half; and they produce their offspring generally towards the end of April, or the beginning of May. Previously to this they drive off their former young-ones, to provide habitations, and to form societies for themselves. They then retire to some secure place in the woods, concealed from the observation of Foxes, and other predacious animals, and there deposit their progeny. These are two in number, usually a male and a female.

Roebucks are natives of woody and mountainous countries, in various parts both of Europe and Asia. In former ages they were very common in many districts of Britain; but the few that are now left are chiefly confined to the Scottish Highlands.

THE WAPITI.

The Wapiti is one of the largest of the Deer tribe, often growing to the height of our largest Oxen. It inhabits Canada and other parts of North America, and has been confounded with the Moose. Its horns are very large, measuring nearly six feet from tip to tip.

The hunters are acquainted with its peculiarities, and chase it from their knowledge of its character. It is very fond of salt, and comes in great numbers to the saline marshes, for the purpose of licking the

HUNTING THE WAPITI.

salt off the soil upon which it has settled. Such places are called "licks," and to them the hunters resort, lying in wait for the Deer, who are sure to visit these places.

It frequents the woods and copses, in which it lies so well concealed, that an inexperienced eye cannot perceive the animal even when it is pointed out to him, so well does its color agree with the tints of the brush among which it hides. From the branching horns which it bears, one might suppose that it would find great difficulty in forcing its way through the woods; but, in fact, its horns are a defence instead of an incumbrance, and as it lays them flat on its back before plunging among the trees, they defend its back from the branches through which it forces its way.

THE WAPITI.

The skin of the Wapiti is very useful to the hunters, as they have a method of dressing it so that it does not become stiff and harsh after being wetted, but retains its original flexibility. This property makes it very valuable for hunting dresses, which are generally made of leather.

It is very fierce, and boldly attacks an antagonist, especially if wounded. An example of its ferocity, when wounded, is given by

Palliser in the following passage:—"We were now about one hundred and fifty yards from the nearest of the band. I chose a fine old Stag, while Boucharville, with an eye to superior meat, singled out a Doe. We drew up our rifles slowly, and both shots went off together. The smoke hung heavily for a second or two; when it cleared away, we espied one of the Wapiti lying down: the next instant down rolled the Stag also. We agreed to advance at the same moment, lest one or other of the animals should be able to get up and escape. On coming near my Stag, he struggled to rise, but unable to regain his feet, rolled back again. I looked towards the other, when what was my surprise at witnessing a regular combat between Boucharville and his wounded Elk,* now transformed into a very formidable antagonist! Springing on her haunches, she was striking furiously at him with her fore-feet; one hoof missed him, but the other fell on his rifle, which he held up for his protection, and smashing both his ramrod and his loading stick, beat him down on his knees. Rising a second time, she was about to repeat the attack, when my ball caught her in the side of the head, behind the eye, and with a splendid bound she fell lifeless on the broad of her back. I had made a quick and necessarily a rather dangerous shot; but I was in luck that day. 'Ah!' exclaimed Boucharville, as he half rose from the ground, but looking at nothing till he had satisfied himself that his rifle was uninjured, 'Mais qui l'aurait cru? Ma foi!' continued he, 'j'ai bien échappé; une biche à une côté et une balle à l'autre!'"

THE WAPITI.

THE AXIS.

This beautiful Deer is an inhabitant of India, especially of parts by the Ganges. It has frequently been domesticated in England, and thrives well even in open parks. The horns are slender, and are divided into three branches. Its usual color is a fawn yellow, spotted regularly with white, and a black stripe runs down the back.

* This animal is often called an Elk by the hunters

THE LONG-TAILED DEER.

THE LONG-TAILED DEER.

The Long-tailed Deer is larger than the Red Deer of Europe, darker in color, on the upper part, white underneath and with a tail eighteen inches long and black on the upper part, with broad white margins, erect when the animal runs. The horns are short and flattened, but not palmated. This species is sometimes called the Black-tailed Deer, it is found in Kansas, Nebraska, and the neighboring regions.

OF THE GIRAFFE TRIBE.

In the lower jaw of the Giraffes there are eight broad and thin front teeth, the outermost of which on each side, are each deeply divided into two lobes.

In the present tribe, of which only a single species has hitherto been discovered, the horns are simple, covered with skin, blunt at the ends, and each terminated by a tuft of black hair.

THE GIRAFFE.

This animal, although nearly allied both to the Deer and Antelope tribes, is so remarkable in its structure, as, in an artificial system at least, to require a distinct classification.

THE GIRAFFE.

The head of the Giraffe bears a considerable resemblance to that of the horse, but is furnished with erect horns, about six inches long, and covered with a hairy skin: these are blunt, as though cut off at the ends, and each tufted with a brush of coarse black hairs. The

neck is very long, thin, and erect, and has on the ridge a short, erect mane, which extends along the back, nearly to the origin of the tail. The shoulders are very deep, which has given rise to a vulgar error that the fore-legs are longer than the hind ones.

THE GIRAFFE.

This extremely singular quadruped is found only in the interior recesses of the forests, or upon the wildest plains, of Africa; whence it is never taken alive, except when young, and where it is seldom ever seen by European travellers.

When they stand with their head and neck perfectly erect, many of these animals measure sixteen or eighteen feet in height. In their native wilds this singular form gives them, at a distance, the appearance of decayed trees; and the deception is not a little aided by their color, reddish white, marked with numerous large rusty spots.

They are of a mild and timid disposition. When pursued, they trot so fast that even a good horse is scarcely able to keep pace with them, and they continue their course for a long time without requiring rest. When they leap, they lift first their fore-legs, and then the hinder ones, in the manner of a horse whose fore-legs are tied together. Their general position, except when grazing, is with the head and neck erect. They feed principally on the leaves of trees, and particularly on those of a peculiar species of mimosa, that is common in the country where they are found, and to which the extreme length of their legs and neck admirably adapts them. When they feed from the ground, they are under the necessity of dividing their fore-legs to a considerable distance. In preparing to lie down, they kneel like the Camel.

It has generally been supposed that the Giraffe possessed neither the power nor the strength to defend itself against the attacks of other animals: this, however, seems to be unfounded; for M. le Vaillant has asserted, that "by its kicks it frequently wearies, discourages, and distances even the Lion." The utility of the horns of the Giraffe appears to be hitherto unknown: this writer says, that they are not used as weapons of defence.

From divers accounts that have been left to us, this animal seems to have been known to the ancients. Heliodorus, the Greek bishop of Sicca, mentions it particularly in his time, and his description seems more original and authentic than those of most of the old writers.

"The ambassadors from the Axiomitæ (he says) brought presents

to Hydaspes, and, among other things, there was an animal of a strange and wonderful species, about the size of a Camel, which had its skin marked with florid spots. The hinder parts, from the loins, were low, like those of a Lion; but the shoulders, fore-feet, and breast, were elevated above proportion to the other parts. The neck was small, and lengthened out from its large body like that of a Swan. The head, in form, resembled a Camel, but was, in size, about twice that of the Lybian Ostrich, and it rolled the eyes, which had a film over them, very frightfully. It differed in its gait from every other land or water-animal, and waddled in a remarkable manner. Each leg did not move alternately; but those on the right side moved together, independently of the other, and those of the left in the same manner, so that each side was alternately elevated. This animal was so tractable as to be led by a small string fastened to its head, and the keeper could con duct it wherever he pleased, as if with the strongest chain. When the animal appeared, it struck the whole multitude with terror; and it took its name from the principal parts of its body, being called by the people, extempore, Camelopardalis."

A Giraffe appears to have been brought to Cairo in the year 1507, for Baumgarten says, that "on the 26th of October, in that year, on looking out at a window he saw the Ziraphus, the tallest creature that he ever beheld. Its skin was all over white and brown, and its neck was almost two fathoms long. Its head was a cubit long, and its eyes looked brisk and lively; its breast was upright, and its back low; it would eat bread or fruits, or any thing else they reached to it."

HOTTENTOTS HUNTING THE GIRAFFE.

In the year 1769, the Dutch governor of the Cape of Good Hope sent out some parties of men on inland discoveries. One of these parties, after having crossed many mountains and plains, found two Giraffes, an old and a young-one. They seized the latter, and were desirous of conveying it alive to Cape Town, but it died before their arrival. They, however, skinned it, and the skin was afterwards sent to Europe, and lodged in the Cabinet of Natural History at Leyden.

The flesh of the young Giraffe is said to be good eating. The Hottentots hunt the animal principally on account of its marrow, which, as a delicacy, they set a high value upon.

The appearance of this animal in its native haunts is very magnificent. Mr. Cumming says, "These gigantic and exquisitely beautiful animals, which are admirably formed by nature to adorn the forests

MR. CUMMINGS HUNTING GIRAFFES.

that clothe the boundless plains of the interior, are widely distributeh throughout the interior of Southern Africa, but are nowhere to be met with in great numbers. In countries unmolested by the intrusive foot of man, the Giraffe is found generally in herds varying from twelve to sixteen; but I have not unfrequently met with herds containing thirty individuals, and on one occasion I counted forty together; this, however, was owing to chance, and about sixteen may be reckoned as the average number of a herd. These herds are composed of Giraffes of various sizes, from the young Giraffe of nine or ten feet in height, to the dark chestnut colored old bull of the herd, whose exalted head towers above his companions, generally attaining to a height of upwards of eighteen feet. The females are of lower stature, and more delicately formed than the males, their height averaging from sixteen to seventeen feet. Some writers have discovered ugliness and a want of grace in the Giraffe, but I consider that he is one of the most strikingly beautiful animals in the creation; and when a herd of them is seen scattered through a grove of the picturesque parasol-topped acacias which adorn their native plains, and on whose uppermost shoots they are enabled to browse by the colossal height with which nature has so admirably endowed them, he must, indeed, be slow of conception who fails to discover both grace and dignity in all their movements. There can be no doubt that every animal is seen to the greatest advantage in the haunts which nature destined him to adorn, and among the various living creatures which beautify creation. I have often traced a remarkable resemblance be-

MR. HARRIS HUNTING GIRAFFES.

tween the animal and the general appearance of the locality in which it is found.

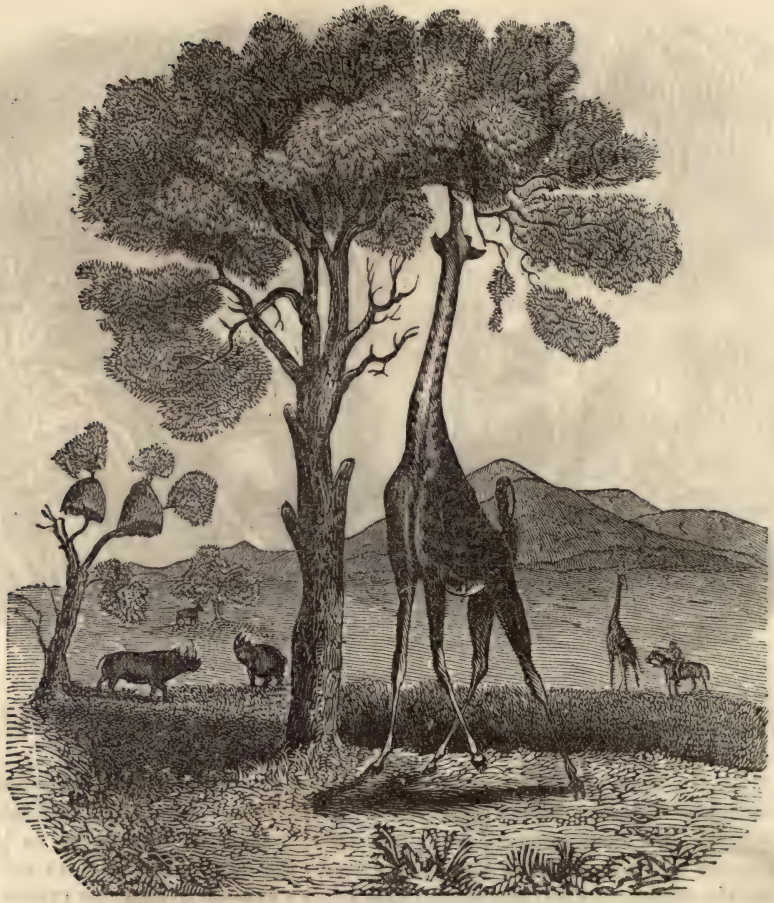
"In the case of the Giraffe, which is invariably met with among venerable forests, where innumerable blasted and weather-beaten trunks and stems occur, I have repeatedly been in doubt as to the presence of them, until I had recourse to my spy-glass; and on referring the case to my savage attendants I have known even their optics to fail, at one time mistaking these dilapidated trunks for Camelopards, and again confounding real Camelopards with these aged veterans of the forest."*

The first living Giraffes, in the possession of the Zoological Society, says Wood, were brought by M. Thibaut in 1835. He succeeded in taking four, all of which he brought with him. One of them is still living. From this stock, several Giraffes have been born, some of which are now in England, and others have been sent to other countries. They are exhibited in most American Menageries.

One of the four originals killed himself soon after his arrival, by striking his head against a wall as he was rising from the ground. An accident of the same nature happened recently to another animal, one of its horns being broken off, and bent backwards; but owing to the presence of mind of the keeper, who immediately pulled the horn into its place again, no bad results followed, the fractured parts uniting naturally.

The tongue of the Giraffe is one of the most remarkable parts of its

* Cummings Adventures, vol. i pp. 269, 270.



GIRAFFE FEEDING.

structure. It is very flexible and capable of great changes of form, the Giraffe being able to contract it so that its tip could enter an ordinary quill. The animal is very fond of exercising its tongue, and sometimes pulls the hairs from its companions' manes and tails, and swallows them; no very easy feat, as the hair of the tail is often more than four feet long.

The movements of the Giraffe are very peculiar, the limbs of each side appearing to act together. It is very swift, and can outrun a Horse, especially if it can get among broken ground and rocks, over which it leaps with a succession of frog-like hops.

In this country it endures the climate well. The Giraffes in the Zoological Gardens which were born and bred in England seem very healthy and are exceedingly tame, examining the hands of their visitors, and following them round the enclosure. They eat herbs, such as grass, hay, carrots, and onions. When cut grass is given to

SURPRISING A GIRAFFE.

them, they eat off the upper parts and leave the coarse stems, just as we eat asparagus.

Giraffes have been brought to the United States at different times in the last twenty years; but they soon die, even in the hands of the most careful and experienced keepers of menageries. The celebrated impresario and manager General Welsh, who died recently in Philadelphia, actually fitted out and headed a hunting expedition into the interior of Africa, from the Cape of Good Hope, in pursuit of Giraffes. Two were brought to this country by him. They were the most delicately formed and beautifully colored animals ever seen; having very light brown spots on a cream colored ground. They were the first living specimens of the Giraffe ever imported into this country; but they lived only a few months after their arrival. A very large one, with darker spots, was afterwards exhibited, which was imported by the way of Egypt. Figures of the Giraffe, accurately outlined, occur frequently on the ancient monuments of Egypt

OF THE ANTELOPES IN GENERAL.

THE males are furnished with hollow horns, (seated on a bony core,) growing upwards, permanent, and annulated or wreathed. In both sexes there are eight front teeth in the lower jaw; and there are no canine teeth either above or below

Linnæus included the Antelopes in the Goat tribe, which they resemble in their horns; but they are now properly separated into an intermediate tribe between the Goats and the Deer.

The Antelopes are an elegant and active tribe of animals, which inhabit mountainous countries. There they bound among the rocks with so much lightness and elasticity, as to strike the spectator with astonishment. They browse like Goats, and frequently feed on the tender shoots of trees. In disposition they are timid and restless, and the Creator has bestowed on them long and tendinous legs, peculiarly appropriated to their habits and manners of life. These, in some of the species, are so slender and brittle as to snap with a very trifling blow.

The eyes of the Antelope are the standard of perfection in the East: to say of a fine woman that "she has the eyes of an Antelope," is considered the highest compliment that can be paid to her.

THE CHAMOIS.

The Chamois is about the size of the common Goat, and is of a dusky yellowish brown color, with the cheeks, chin, throat, and belly, of a yellowish white. The horns are slender, upright, about eight inches high, and hooked backwards at the tips: their color is black. At the back part of the base of each horn there is a tolerably large orifice in the skin, the nature and use of which do not yet seem to be clearly understood. The hair is rather long; and the tail short and of a blackish color. The eyes are round, sparkling, and full of animation.

THE CHAMOIS.

These animals, inhabitants chiefly of the Alps and the Pyrenees, are found in flocks of from four to eighty, and even a hundred in number, dispersed upon the crags of the mountains. They do not feed indiscriminately, but only on the most delicate herbage they can find.

Their sight is very penetrating, and their senses of smelling and hearing are remarkably acute. When the wind blows in a proper direction, they are said to be able to scent a man at the distance of a mile or upwards. Their voice somewhat resembles that of a hoarse

domestic Goat: by means of this they are called together. When alarmed they adopt a different noise, and advertise each other by a kind of whistle. This the animal on watch continues as long as he can blow without taking breath: it is at first sharp, but flattens towards the conclusion. He then stops for a moment, looks round on all sides, and begins whistling afresh, which he continues from time to time. This is done with such force, that the rocks and forests re-echo the sound. His agitation is extreme. He strikes the earth with his feet. He leaps upon the highest stones he can find, again look around, leaps from one place to another, and when he discovers any thing seriously alarming, flies off. This whistling is performed through the nostrils, and consists of a strong blowing, similar to the sound which a man may make by fixing his tongue to the palate, with his teeth nearly shut, his lips open and somewhat extended, and blowing long, and with great force.

CHAMOIS HUNTER.

The Chamois scramble with astonishing agility among the inacces-

CHAMOIS HUNTING IN WINTER.

sible rocks of the country which they inhabit. They neither ascend nor

descend perpendicularly, but always in an oblique direction. When descending, in particular, they will throw themselves down across a rock, which is nearly perpendicular, and twenty or thirty feet in height without having a single prop to support their feet. In descending they strike their feet three or four times against the rock, till they arrive at a proper resting place below. The spring of their tendons is so great that, when leaping about among the precipices, one would almost imagine that they possessed wings instead of limbs.

They are hunted during the winter for their skins, which are very useful in mannfactures; and for their flesh which is good eating. The chase of these animals is a laborious employment, as much care is necessary in order to get near them. They are shot with rifle-barrelled guns. They generally produce two young-ones at a birth; and are said to be long-lived.

THE NYL-GHAU.

The height of the Nyl-ghau is somewhat more than four feet at the shoulder. The male is of a dark gray color and furnished with short, blunt horns, that bend a little forward. There are white spots on the neck, between the fore-legs, on each side behind the shoulder joints, and on each fore foot. The female, which is destitute of horns, is of a pale brown color, with two white and three black bars on the fore part of each foot, immediately above the hoofs. On the neck and part of the back of each is a short mane; and the fore part of the throat has a long tuft of black hairs. The tail is long and tufted at the end.

THE NYL-GHAU.

Although the Nyl-ghau is reported to be an exceedingly vicious creature, yet one of these animals which was in the possession of Dr. William Hunter, was quite tame and docile. It was pleased with every kind of familiarity, alwavs licked the hand which either stroked it or

gave it bread, and never once attempted to use its horns offensively. It seemed to have much dependence on the organs of smell, and snuffed keenly, and with considerable noise, whenever any person came within sight. It did the same when food or drink was brought to it; and was so easily offended with an uncommon smell, or was so cautious, that it would not taste bread that was offered with a hand that had touched oil of turpentine or spirits.

In February, 1820, there was a Nyl-ghau in the exhibition-rooms at Exeter 'Change. It had been there six years, and was tolerably docile, but capricious and not to be depended upon.

THE NYL GHAU.

The manner in which these animals fight is very peculiar. This was observed at Lord Clive's, where two males were put into a little enclosure. While they were at a considerable distance from each other they prepared for the attack by falling down upon their fore knees, and when they came within a few yards they made a spring, and darted against each other

At the time that two Nyl-ghaus were in his stable, Dr. Hunter observed, that whenever any one approached them with a hostile appearance, they immediately fell upon their fore knees; and sometimes they would do so when he came before them; but as they never darted forward, he so little supposed this to be a hostile posture, that he rather supposed it to be expressive of a timid or obsequious humility.

The force with which the Nyl-ghau can dart against any object, may be conceived from the following anecdote that has been related of one of the finest of these animals that has ever been seen in England. A laboring man, without knowing that the animal was near him, and therefore neither meaning to offend, nor suspecting that he was exposed to any danger, came to the outside of the pales of the enclosure where it was kept: the Nyl-ghau, with the swiftness of lightning, darted against the wood-work, and with such violence, that he shattered it to pieces, and broke off one of his horns close to the root. This violence, it is supposed, occasioned his death, for he died not long afterwards. From this it appears, that at certain seasons the animal is vicious and fierce, however gentle it may be at other times.

The first of this species that were brought into England were a male and female, sent from Bombay as a present to Lord Clive, in 1767. They bred every year. Afterwards two others were sent over, and were presented to the queen by Mr. Sullivan. These were the two above described.

The Nyl-ghau is seldom found wild in any of the parts of India where we have settlements: such animals as are seen there have been brought from the distant interior parts of the country. Bernier mentions them in his travels from Delhi to the province of Cachemire. He describes the emperor's amusement of hunting them, and says that sometimes

great numbers of them are killed. In several parts of the East they are considered as royal game, and are only hunted by the princes.

THE SCYTHIAN ANTELOPE.

The Scythian Antelope is about the size of the Fallow Deer, and of a greyish yellow color. The horns are annulated, about a foot long, and bent in the form of a lyre. The head is somewhat large, and the neck slender. The tail is about four inches long; naked below, clothed above with upright hairs, and ending in a tuft. The females are without horns.

THE SCYTHIAN ANTELOPE.

Several dreary and open deserts about Mount Caucasus and the Caspian Sea, and in Siberia, are frequented by these animals. They chiefly confine themselves to countries where there are salt springs; for on the plants that grow near these, and on salt, they principally feed. While feeding they frequently walk backward and pluck the grass on each side. They are migratory, collecting towards the end of autumn in flocks, which consist of some thousands, and retiring into the southern deserts. In spring they divide again into little flocks, and return to the north.

It seldom happens that a whole flock lies down to rest all at the same time; some of the animals are generally stationed on watch. When these are tired, they give a kind of notice to such as have taken their rest, who instantly rise, and relieve the sentinels of the preceding hours. By this means they often preserve themselves from the attacks of wolves, and from the insidious stratagems of hunters. They are so swift, that they are able for a while to outrun the fleetest horse or greyhound; yet such is their extreme timidity and shortness of breath, that they are soon caught. If they be only bitten by a dog, they instantly fall down, and will not again attempt to rise. In running they seem to incline on one side; and their fleetness is for a short time so astonishing, that their feet appear scarcely to touch the ground. In consequence of the heat of the sun, and the reflection of its rays from the sandy plains which they frequent, they become in summer almost blind. In a wild state they seem to have no voice, but when they are brought up tame the young-ones emit a sort of bleating, like sheep.

THE GNOO, OR WILDEBEEST.

The Gnoo, or Wildebeest, inhabits southern Africa. At first sight it is difficult to say whether the Horse, Buffalo, or Deer predominates in its form. It however belongs to neither of these animals, but is one of the bovine Antelopes. The horns cover the top of the forehead, and then, sweeping downwards over the face, turn boldly upwards with a sharp curve. The neck is furnished with a mane like that of the Horse, and the legs are formed like those of the Stag. It is a very swift animal, and when provoked, very dangerous. When it attacks an opponent it drops on its knees, and then springs forward with such force that, unless he is extremely wary and active, he cannot avoid its shock. When first alarmed, its movements are very grotesque and are thus described by Cumming:

THE GNOO, OR WILDEBEEST.

"When the hunter approaches the old bulls, they commence whisking their long white tails in a most eccentric manner; then springing suddenly into the air, they begin prancing and capering, and pursue each other in circles at their utmost speed. Suddenly they all pull up together, to overhaul the intruder, when two of the bulls will often commence fighting in the most violent manner, dropping on their knees at every shock; then quickly wheeling about, they kick up their heels, whirl their tails with a fantastic flourish, and scour across the plain enveloped in a cloud of dust."

When it is taken young, the Gnoo can be domesticated, and brought up with other cattle, but it will not bear confinement, and is liable to become savage under restraint.

There are several species of this animal, three being satisfactorily ascertained, namely, the common Gnoo, represented in the accompanying engraving, the Cocoon, (Catoblepas Taurina,) and the Brindled Gnoo (Catoblepas Gorgon), all three animals being in the British Museum.

The size of the Gnoo is about that of a well-grown Ass, that is, about four feet in height. Its flesh is in great repute, both among the natives and colonists.

THE KOODOO.

Is a native of South Africa, living along the wooded borders of rivers. It is chiefly remarkable for its beautifully shaped horns, which are about four feet in length and twisted into a large spiral of about two turns and a half. A bold ridge runs along the horns and follows their curvature. When hard pressed it always takes to the water, and endeavors to escape by its powers of swimming. Although a large animal, nearly four feet in height, it can leap with wonderful activity. The weight of the horns is very considerable, and partly to relieve itself of that weight, and partly to guard them from entanglement in the bushes among which it lives and on which it feeds, it carries its head backwards, so that the horns rest on its shoulders.

THE KOODOO.

THE KOODOO.

The best and fullest accounts of the Eland and the Oryx are to be found in Harris and Cumming's Adventures in South Africa. An extract from Cumming will be both interesting and accurate. Of the Eland, he writes:—

"This magnificent animal is by far the largest of all the antelope tribe, exceeding a large ox in size. It also attains an extraordinary condition, being often burlened with a very large amount of fat. Its flesh is most excellent,

and is justly esteemed above all others. It has a peculiar sweetness, and is tender and fit for use the moment the animal is killed. Like the Gemsbok, the Eland is independent of water. It is generally

THE ELAND.

diffused throughout all the wooded districts of the interior where I have hunted. Like other varieties of Deer and Antelope, the old males

MR. HARRIS HUNTING THE ELAND.

may often be found consorting together apart from the females, and a troop of these, when in full condition, may be likened to a herd of stall-fed-oxen.

"I have repeatedly seen an Eland drop down dead at the end of a severe chase, owing to his plethoric habit. The skin of the Eland I had just shot emitted, like most other antelopes, the most delicious perfume of trees and grass."

The height of the Eland is fully five feet at the shoulders, and its weight from seven to nine hundred-weight. The horns of the male are about a foot and a half in length, while those of the female are smaller, and sometimes without the spiral wreathing.

THE ORYX.

The Oryx, also a South African animal, is well known among hunters as the only Antelope that revenges itself on the Lion. When it sees the Lion in the act of springing on it, it lowers its head, receiving the Lion on the points of its sharp horns. It invariably perishes by the shock, but the Lion also perishes with it. Their skeletons have more than once been seen lying together bleached on the plain. The description given of this animal by Cumming is highly graphic. "The Oryx, or Gemsbok, to which I was now about to direct my attention, more particularly, is about the most beautiful and remarkable of all the Antelope tribe. It is the animal which is supposed to have given rise to the fable of the Unicorn, from its long straight horns, when seen in profile, so exactly covering one another as to give it the appearance of having but one. It possesses the erect

THE ORYX. THE ORYX.

mane, long sweeping black tail, and general appearance of the Horse with the head and hoofs of an Antelope. It is robust in its form

squarely and compactly built, and very noble in its bearing. Its height is about that of an Ass, and in color it slightly resembles that animal. The beautiful black bands which eccentrically adorn its head, giving it the appearance of wearing a stall collar, together with the manner in which the rump and thighs are painted, impart to it a character peculiar to itself. The adult male measures three feet ten inches in height at the shoulder."

The sharp horns of the Oryx stand it in good stead, when pursued by Dogs, as it generally kills several of them before it is vanquished, and if the hunter's rifle is not at hand, drives off the Dogs and escapes.

THE SPRINGBOK.

The Springbok is one of the smaller South African Antelopes. Its color is a light cinnamon red on the back, fading into white on the under part of the body, a narrow band of reddish brown separating the two colors.

THE SPRINGBOK.

For a description of the habits of the animal, I must again refer the reader to Cumming. During his early travels in South Africa, the first object that met his eyes on waking one morning, was a herd of Springboks, which he thus describes:

"On the 28th I had the satisfaction of beholding, for the first time, what I had often heard the Boers allude to, viz. a "trek-bokken," or grand migration of Springboks. This was, I think, the most extraordinary and striking scene, as connected with beasts of the chase, that I have ever beheld. For about two hours before the day dawned I had been lying awake in my wagon, listening to the grunting of the bucks within two hundred yards of me, imagining that some large herd of Springboks was feeding beside my camp; but on my rising when it was clear, and looking about me, I beheld the ground to the northward of my camp actually covered with a dense living mass of Springboks, marching slowly and steadily along, extending from an opening in a long range of hills on the west, through which they continued pouring, like the flood of some great river, to a ridge about a mile to the north-east, over which they disappeared. The breadth of the ground they covered might have been somewhere about half a mile. I stood upon the fore-chest of my wagon for nearly two hours, lost in wonder at the novel and wonderful scene which was passing before me, and had some difficulty in convincing myself that it was a a reality which I beheld, and not the wild and exaggerated picture of a

MR. CUMMING'S PURSUING A GREAT HERD OF SPRINGBOKS.

hunter's dream. During this time their vast legions continued streaming through the neck in the hills in one unbroken compact phalanx.

"Vast and surprising as was the herd of Springboks which I had that morning witnessed, it was infinitely surpassed by what I beheld on the march from my vley to old Sweir's camp; for on our clearing the low range of hills through which the Springboks had been pouring, I beheld the boundless plains, and even the hill sides which stretched away on every side of me, thickly covered, not with herds, but with one vast herd of Springboks; as far as the eye could strain the landscape was alive with them, until they softened down into a dim red mass of living creatures."

The Springbok is very fearful of man, and if it has to cross a path over which a man has passed before, it does not walk over, but takes a tremendous leap, ten or twelve feet high, and about fifteen feet long, at the same time curving its back in a most extraordinary manner. It is from this habit of leaping that the Dutch Boers who inhabit the Cape have given it the name of Springbok.

THE GAZELLE.

The Gazelle, so famous in oriental poetry, inhabits Arabia and Syria. Its eyes are very large, dark and lustrous, so that the oriental poets love to compare the eyes of a woman to those of a Gazelle, just as Homer constantly applied the epithet ox-eyed (Βοῶπις) to the more majestic goddesses, such as Juno and Minerva. It is easily tamed when young, and is frequently seen domesticated in the court-yards of houses in Syria. Its swiftness is so great that even a greyhound

cannot overtake it, and the hunters are forced to make use of hawks, which are trained to strike at the head of the Gazelle, and thus confuse it, and retard its speed, so as to permit the dogs to come up. In several parts of Syria, the Gazelle is taken by driving a herd into a large enclosure surrounded by a deep ditch. A few gaps are made, through which the terrified animals leap, and fall into the ditch, when they are easily taken. The height of the Gazelle is about one foot nine inches; its color a dark yellowish brown, fading into white on the under parts.

THE GAZELLE.

THE HARTEBEEST.

Of the Hartebeest, according to Harris, the adult male is five feet high and nine long, with crooked horns, variegated color, light body, long tail and fiery red eyes. It inhabits the interior of South Africa, beyond the Orange river, in immense herds.

THE HARTEBEEST.

THE SARRAYBE.

The Sarraybe, found in the same locality, is four and a half feet high, five long, with strong, pointed horns forming two crescents at top, short neck, bulky body, slender legs, long narrow head, blackish color, variegated with purple and yellow and fiery red eyes.

THE PALLAH.

The Pallah is gregarious in small families or herds and inhabits the thinly wooded banks of rivers chiefly in the Bechuana country in South Africa. It is three and a quarter feet high, (the adult male,) and six feet long. Stands high on the legs; with horns twenty inches long ascending obliquely upwards, outwards and backwards. His

ears are round, tail thirteen inches long, color above fulvous, sides yellow dun, belly white. The female has no horns.

THE BLAUWBUCK.

THE BLAUWBUCK.

The Blauwbuck is found only on or near the banks of rivers near the Tropic, the Limpopo and Mariqua rivers especially. It is three and a half feet high and proportionally long, has long horns upright, curved backwards and outwards, general color sepia brown, variegated with deep brown and white. His hair is very coarse. The female has no horns.

THE REIT BUCK.

The Reit Buck is sometimes gregarious in small families and sometimes solitary. It is found in various localities of South Africa, generally among reeds. The male is two and three quarter feet high and nearly five feet long. Its horns are ten or twelve inches long diverging, with the points curved forward. The tail is ten inches long. Its color is ashy gray, tinged with ochre, white beneath, with the hair of the throat white and floating.

THE REIT BUCK.

THE DORCAS GAZELLE.

The Dorcas Gazelle is two feet five inches high, with a very slender body, long neck, small head and pointed ears. The horns are nine inches long, slender and pointed. The hair is soft and woolly, the general color whitish gray. The tail is about five inches long. It is found within the colony of the Cape of Good Hope, in small troops, amongst hills and rocks.

THE DORCAS GAZELLE.

THE BLESBOK

This Antelope is about twenty-two inches high at the shoulder, with curved horns. Its fur is thick, general color olive. It is common north of the Cape of Good Hope, inhabiting the plains in vast herds.

THE KLEEN BUCK.

This is a timid, delicate Antelope, living in pairs among the rocks, near the Cape of Good Hope. It is difficult to take or shoot, on account of its extreme shyness.

OF THE GOAT TRIBE IN GENERAL.

THE horns of these animals are hollow, rough, and compressed: they rise somewhat erect from the top of the head, and bend backwards. In the lower jaw there are eight front teeth, and in the upper jaw none; and no canine-teeth in either. The chin is bearded.

The animals of the Goat kind live principally in retired mountainous situations, and have a rank and unpleasant smell, especially the males. Although very shy and timid in a wild state, they are easily rendered domestic, and even familiar. They differ from sheep not only in the erect position of their horns, but also when they fight, in rising on their hind legs, and turning their head on one side to strike; for rams run full tilt at each other with their heads down.

THE COMMON GOAT.

THE COMMON GOAT.

The Goat is a lively, playful animal, and easily familiarized; being sensible of caresses, and capable of a considerable degree of attachment. His disposition, however, is extremely inconstant, which is marked by the irregularity of all its actions: he walks, stops short, runs, leaps, approaches or retires, shows or conceals himself, or flies off, as if actuated by mere caprice, and without any other cause than what arises from the eccentric vivacity of his temper. In some instances these animals, from their extreme familiarity, have become troublesome. "In the year 1698, (says M. de Buffon,) an English vessel having put into the harbor of the island of Bonavista, two negroes went on board, and offered the captain as many Goats as he chose to carry away. He expressed his surprise at this offer; but the negroes informed him that there were only twelve persons on the island, and that the Goats multiplied so fast as to become exceedingly troublesome; for, instead of being difficult to catch, they followed the people about like domestic animals, with an unpleasant degree of obstinacy."

Goats love to feed on the tops of hills, and prefer the very elevated and rugged parts of mountains: they find sufficient nourishment even in the most heathy and barren grounds. These animals are so active that they are able to leap with ease and the utmost security, among

the most dreadful precipices: and even when two of them are yoked together, they will, as it were by mutual consent, take the most dangerous leaps, and exert their efforts in such perfect unison as generally to accomplish them unhurt.

In mountainous countries they render considerable service to mankind: the flesh of the old ones is salted as winter provision, and their milk is used in many places for the making of cheese. The flesh of the Kid is equal in flavor to the most delicate lamb.

M. Sonnini, in his edition of Buffon's Natural History, has given us a curious instance of the readiness with which the Goat will permit itself to be sucked by animals of a different kind, and far larger size, than itself. He assures us that he saw, in the year 1780, a foal, that had lost its mother, thus nourished by a Goat, which was placed on a barrel, in order that the foal might suck with greater convenience. The foal followed its nurse to pasture, as it would have done its parent, and was attended with the greatest care by the Goat, which always called it back by her bleatings, when it wandered to any distance from her.

Goats are exceedingly numerous in South Guinea; and some of the negroes there have a singular notion that their strong and offensive smell was given to them, as a punishment, for having requested of a certain female deity, that they might be allowed to anoint themselves with a kind of aromatic ointment which she used herself. Offended at the request, they say, she took a box containing a most nauseous compound, and rubbed their bodies with it; and that this had so powerful an effect, as to cause the unpleasant smell thence produced to continue ever afterwards.

THE IBEX.

The male Ibex is larger than the tame Goat, but resembles it much in appearance. The head, in proportion to the body, is small. The eyes are large, round, and brilliant. The horns are large, weighing sometimes sixteen or eighteen pounds, and measuring from two to four feet in length: they are flattened before, round behind, and divided by several transverse ridges; are bent backward, and of a dusky brown color. The beard is long, the legs are slen-

THE IBEX.

HUNTING THE IBEX.

der, and the body is short, thick, and strong. The tail is short, and naked beneath. The hair is long, and of a brownish or ash-color, with a streak of black running along the back. The belly and thighs are of a delicate fawn-color.—The female is about a third less than the male, and not so corpulent. Her color is less tawny, and her horns not above eight inches long.

These animals assemble in flocks, consisting of sometimes ten or fifteen, but generally of smaller numbers. They feed during the night in the highest woods; but at sun-rise they quit the woods, and ascend the mountains, feeding in their progress, till they have reached the most considerable heights. They are generally seen on the sides of the mountains which face the east or south, and they lie down in the highest places and hottest exposures; but when the sun is declining, they again begin to feed and to descend towards the woods; whither they also retire when it is likely to snow, and where they always pass the winter.

The males that are six years old and upwards, hunt more elevated places than the females and younger animals; and, as they advance in age, they become more inclined to solitude. They also become gradually hardened against the effects of extreme cold, and frequently live entirely alone.

The season for hunting the Ibex is during the months of August and September, when they are usually in good condition. None but the inhabitants of the mountains engage in this chase; for it not only requires a head that can bear to look down from the most tremendous heights without terror, but address, and surefootedness in the most difficult and dangerous passes, and also much strength, vigor, and activity. Two or three hunters usually associate in the perilous occupation: they are armed with rifled-barrelled guns, and furnished with small bags of provisions; they erect a miserable hut of turf among the

heights, where, without fire or covering, they pass the night; and, on waking in the morning, they not unfrequently find the entrance blocked up with snow three or four feet deep. Sometimes, in pursuit of this animal, being overtaken by darkness, amid crags and precipices, they are obliged to pass the whole night standing, and embraced together, in order to support each other, and to prevent themselves from sleeping.

IBEX HUNTERS IN TROUBLE.

As the animals ascend into the highest regions very early in the morning, it is necessary to gain the heights before them, otherwise they scent the hunters, and betake themselves to flight. It would then be in vain to follow them; for, when once they begin to escape, they never stop till they are entirely out of danger, and they will even sometimes run for ten or twelve leagues before they rest.

Being very strong, when they are close pressed they not unfrequently turn upon the incautious huntsman, and tumble him down the precipice, unless he has time to throw himself upon the ground, and let the animal pass over him. It is said also, that when they cannot otherwise avoid the hunter, these animals will cast themselves down the steepest precipices, and fall on their horns in such a manner as to escape unhurt. It is even pretended, that, to get out of the reach of huntsmen, they will hang by their horns over the precipices, on some projecting tree, and remain suspended till the danger is over.

The Ibex can mount a perpendicular rock fifteen feet high, at three leaps, or rather at three successive bounds of five feet each. It does not seem as if he found any footing on the rock: he appears to touch it merely to be repelled, like an elastic substance striking against a hard body. He is not supposed to take more than three successive leaps in this manner. If he be between two rocks which are near each other, and he want to reach the top, he leaps alternately from the side of one rock to that of the other till he has attained the sum-

THE IBEX.

mit. The fore-legs being considerably shorter than the hinder ones, enable these animals to ascend with much more ease than to descend; and on this account it is that nothing but the severest weather will induce them to go down into the valleys.

Their voice is a short, sharp whistle, not much unlike that of the Chamois: sometimes they make a kind of snort, by breathing hard through their nostrils, and when young they bleat.

The female exhibits the greatest tenderness and attachment for her offspring, and will defend it even against the attacks of Wolves and Eagles.

THE SYRIAN GOAT.

The Syrian Goat is distinguished by long, silky hair, and very long pendent ears It is found in Syria and Asia Minor.

OF SHEEP IN GENERAL.

THE horns of Sheep are hollow, wrinkled, and perennial; bent backward and outward into a circular or spiral form, generally at the sides of the head. The lower jaw has eight front-teeth: there are no teeth in the upper jaw, nor any canine teeth in either.

THE SHEEP.

Few animals render greater or more essential services to mankind than the Sheep. They supply us with both food and clothing; and the wool alone of the common Sheep affords, in some countries, an astonishing source of industry and wealth. These are all harmless animals, and, in general, exceedingly shy and timid. Both in running and leaping they exhibit much less activity than the goats. They collect, in a wild state, into small flocks; and, though they do not altogether avoid the mountains, they generally prefer dry and open plains. They fight by butting against each other with their horns, and threaten by stamping on the ground with their feet. Their period of gestation is about five months, and the females usually produce one, sometimes two, and rarely three young-ones at a birth.

There are, strictly speaking, only *two* different species of Sheep: but of the common Sheep there are no fewer than ten or twelve very distinct varieties.

THE COMMON SHEEP.

Sheep are highly useful animals. When enslaved by man, they tremble at the voice of the shepherd or his Dog; but, on the extensive mountains where they range almost without control, and where they seldom depend on the aid of the shepherd, they assume a very different mode of conduct. In these situations a Ram or a Wedder will boldly attack a single Dog, and often come off victorious; but, when the danger is more alarming, they have recourse to the collected strength of the whole flock. On such occasions they draw up into a body, and place the females and young-ones in the centre, whilst the males take the foremost ranks, keeping close by each other. Thus an armed front is presented on all quarters, that cannot easily be attacked without danger of destruction to the assailant. In this manner they wait with firmness the approach of the enemy; nor does their courage fail them in the moment of attack; for, when the

aggressor advances within a few yards of the line, the Rams dart upon him with such impetuosity as to lay him dead at their feet, unless he save himself by timely flight. Against the attacks of single Dogs, or Foxes, when in this situation, they are perfectly secure. A single Ram, regardless of danger, will sometimes engage a Bull; and, his forehead being much harder than that of any other animal, he seldom fails to conquer; for the Bull, by lowering his head, receives the stroke of the Ram between his eyes, which usually brings him to the ground.

THE COMMON SHEEP.

The Sheep, in the mountainous parts of Wales, where the liberty they enjoy is so great as to render them very wild, do not always collect into large flocks, but sometimes graze in parties of from eight to a dozen, of which one is stationed at a distance from the rest, to give notice of the approach of danger. When the sentinel observes any one advancing, at the distance of two or three hundred yards, he turns his face to the enemy, keeping a watchful eye upon his motions, and allowing him to approach as near as eighty or a hundred yards; but, when the suspected foe manifests a design of coming nearer, the watchful guard alarms his comrades by a loud hiss or whistle, twice or thrice repeated, when the whole party instantly scour away with great agility, always seeking the steepest and most inaccessible parts of the mountains.

It is very singular that in the Holms round Kirkwall, in the island of Mainland, one of the Orkneys, if a person about the lambing-time enters with a Dog, the Ewes suddenly take fright, and through the influence of fear, as it is imagined, they instantly drop down dead, as though their brain had been pierced with a musket-ball.

No country produces finer Sheep than Great Britain; and their fleeces are large, and well adapted to the various purposes of clothing. Of these, the Sheep that are bred in Lincolnshire and the northern counties are most remarkable for their size, and for the quantity of wool which they bear. In other parts of England they are generally smaller; and in the mountainos districts of Wales and Scotland they are very small.

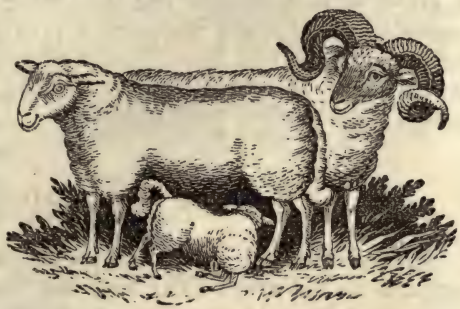
Besides the fleece, there is scarcely any part of this animal but what is useful to mankind. The flesh is a delicate and wholesome food. The skin, dressed, forms different parts of our apparel; and is used for the covers of books. The entrails, properly prepared and twisted, serve for strings to various kinds of musical instruments.

The bones, calcined, form materials for tests for the refiner. The milk is thicker than that of Cows, and consequently yields a greater quantity of butter and cheese; and in some places is so rich, as not to produce the cheese without a mixture of water to make it part from the whey.

SHEEP AND LAMB.

There are in the voices of all animals innumerable tones, perfectly understood by each other, and entirely beyond our powers of discrimination. It should seem somewhat remarkable that the Ewe can always distinguish her own Lamb, and the Lamb its mother, even in the largest flocks. And at the time of shearing, when the Ewes are shut up in a pen from the Lambs, and turned loose one by one as they are shorn, it is pleasing to see the meeting between each mother and her young-one. The Ewe immediately bleats to call her Lamb, which instantly obeys the well-known voice, and, returning the bleat, comes skipping to her. At first it is startled by her new appearance, and approaches her with some degree of fear, till it has corrected the sense of sight by those of smelling and hearing.

Various sorts of insects infest the Sheep, but that which is the most teasing to them is a species of gadfly, (the *oestrus ovis* of Linnæus,) that deposits its eggs on the inner margins of their nostrils, occasioning them to shake their heads violently, and thrust their noses into the dust or gravel. The larvæ, or grubs of these insects, when hatched, crawl up into the frontal sinuses, and, after they are full fed and ready to undergo their change, they are again discharged through the nostrils. The French Shepherds have a practice of relieving the Sheep by trepanning them, and taking out the maggot: this is sometimes practised in England, but not always with success. Sheep have, besides this, a kind of tick (*acarus reduvius*) amongst their wool, and are subject to a species of fluke-



THE SHEEP.

worms (*fasciola hepatica*) in the liver. An excellent variety of the common sheep, the Merino, was introduced into the United States from Spain about 40 years ago, and is now generally diffused over the northern and middle states.

The Icelandic Sheep.

The Icelandic or many-horned Sheep differ from ours in several particulars. They have straight, upright ears, a small tail, and sometimes four or five horns.

In a few instances these animals are kept in stables during winter; but by far the greatest number of them are left to seek their own food in the open plains. In stormy weather they hide themselves in caves from the fury of the elements; but when retreats of this kind are not to be found, they collect together during the heavy falls of snow, and place their heads near each other, with their muzzles downward towards the ground. This not only prevents their being so easily buried under the snow as they otherwise would be, but, in many cases enables their owner to discover them. In such situations they will sometimes remain for several days; and there have been many instances of hunger forcing them to gnaw each other's wool. After the storm has ceased, they are sought for and disengaged.

ICELANDIC SHEEP ATTACKED BY WOLVES.

A good Icelandic Sheep will yield from two to six quarts of milk a day; and of this the inhabitants make butter and cheese. But the chief profit is derived from their wool, which is not shorn, but remains on till the end of May, when it loosens of itself, and is stripped off at once, like a skin. The whole body is by this time covered again with new wool, which is short and extremely fine. It continues to grow during the summer, and becomes towards autumn of a coarser texture, is very shaggy, and somewhat resembles camel's hair. This covering enables the Sheep to support the rigors of winter; but if, after they have lost their fleece, the spring prove wet, the inhabitants sew a piece of coarse cloth round the stomachs of the weakest, to guard them against its ill effects.

The Broad-tailed Sheep.

In their general appearance, with the exception of the tail, these animals do not much differ from the European Sheep. The tail, however, is so large, as sometimes to weigh nearly one-third of the whole carcass. It is entirely composed of a substance between marrow and fat, which serves for culinary purposes instead of butter; and, being

cut into small pieces, makes an ingredient in various dishes. When the animal is young, this is a little inferior to the best marrow.

Sheep of this description are usually kept in yards, so as to be in little danger of injuring their tails as they walk about; but when they run in the fields, the shepherds, in several parts of Syria, fix a thin piece of board on the under part, and to this board are sometimes added small wheels: whence, with a little exaggeration, we have the story of the Oriental Sheep having carts to carry their tails.

THE BROAD-TAILED SHEEP.

Their fleeces are exceedingly fine, long, and beautiful; and, in Thibet are worked into shawls, which form a considerable source of wealth to the inhabitants. These Sheep are found in the neighborhood of Aleppo; in Barbary, Ethiopia, and some others of the eastern countries.

THE ARGALI.

The Argali, or wild Sheep, have large horns, arched semicircularly backward, and divergent at their tips; wrinkled on their upper surface, and flatted beneath. On the neck are two pendent hairy dew-laps. This Sheep is about the size of a small deer, and in summer is of a brownish-ash color, mixed with grey on the upper parts, and whitish beneath. In winter the former changes to a rusty, and the latter to a whitish gray; and the hair becomes considerably longer. The horns of some of the old Rams are said to be of such an enormous size, as to weigh fifteen or sixteen pounds each.

THE ARGALI.

The Argali abound in Kamtschatka, where they supply the inhabitants both with food and clothing. Their flesh, and particularly their fat, are esteemed by the Kamtschadales as diet fit for the gods; and

HUNTING THE ARGALI.

there is no labor which this people will not undergo in the chase of these animals. Whole families abandon their habitations in the spring of the year, and occupy the entire summer in this employment, amidst the steepest and most rocky mountains, fearless of the dreadful precipices which often overwhelm the eager sportsmen.

These animals are shot with guns or with arrows; sometimes with cross-bows placed in their paths. They are sometimes chased by dogs, but their fleetness leaves these far in the rear. The purpose, however, is answered: they are driven to the heights, where they often stand and view, as it were with contempt, the dogs below: while their attention is thus occupied, the hunter creeps cautiously within reach, and brings them down with his gun.

In some of the other northern countries a great multitude of horses and dogs are collected together, and a sudden attempt is made to surround them. But great caution is requisite; for, if the animals, either by sight or smell, perceive the approach of their enemies, they instantly escape, and secure themselves among the lofty and inaccessible summits of the mountains.

Besides Kamtschatka, the Argali are found in all the alpine regions of the centre of Asia; and on the highest mountains of Barbary, Corsica and Greece.

THE ROCKY MOUNTAIN SHEEP.

This animal, called also, the American Argali and the Big Horn, is found among the Rocky Mountains in North America. They are not larger than a common Sheep. Their color is a light fawn, wool thick, and their horns enormous, so that when hard pressed by the hunter, or even when sporting alone, they do not hesitate to drop from a preci-

ROCKY MOUNTAIN SHEEP DEVOURED BY EAGLES AND WOLVES.

pice, and falling head foremost, they alight on their horns, and instantly recover their footing without injury. They are exceedingly shy, and almost unapproachable by any but the most skilful hunter.

WALLACHIAN SHEEP.

This animal is thus referred to in the Penny Magazine:—

"A few years since, a splendid Ram which came from Mount Parnassus was presented by Dr. Bowring to the Zoological Society. Like its relatives peculiar to our parts of Europe, it was very stupid, but at the same time vicious and unruly, and of amazing strength. Its horns were very large, spirally contorted, adding greatly to its striking and picturesque appearance. Its wool, if wool it could be called, differed materially in quality and texture from that of our breeds. Instead of being curly and matted, or felted into a mass, it was of great length, perfectly straight, close set, and beautifully fine, falling from the middle of the back on either side of the animal almost to the ground. On the face the hair was short and of a

THE WALLACHIAN SHEEP.

rusty black, on the body it was white. To this description it may be added, that the horns of the male mostly rise almost perpendicularly from the skull, making a series of spiral turns in their ascent, the first turn being the largest, while in the female they diverge, taking a lateral direction. In the specimen, however, to which we have alluded, and which was a male, they extended laterally from the skull, and after the first turn took a downward sweep. It is probable, therefore, that as far as this point is concerned, there is a certain degree of individual variation among the breed, as indeed might be expected, seeing as we do how unfixed are all the external characters of our well-known domestic races, and how soon they are capable of being modified."

THE OX.

OF OXEN IN GENERAL.

In the Oxen the horns are concave, smooth, and turned outward, and forward, in a semilunar form. In the lower jaw there are eight front teeth; there are none in the upper, and no tusks in either jaw.

The animals of this tribe are seldom found except in low and rich pastures and plains, or in swamps and morassy grounds. In size and bulk they exceed all the British quadrupeds except the horse. Their services to mankind are more considerable than those even of the Sheep; for, in addition to the qualifications of the latter, they are employed as beasts of draught and burden. Their voice is called *lowing* and *bellowing*. They fight by pushing with their horns, and kicking with their feet.

There are about *nine* species; but many of these are so nearly connected, as to render it difficult for the naturalist to assign a proper distinction between them.

THE COMMON OX.

The color of this animal is invariably white; the muzzle is black; and the whole inside of the ear, and about one-third part of the outside, from the tip downwards, red. The horns are white, with black tips, very fine, and bent downwards. The weight of the Bulls is from thirty-five to forty-five stone, and of the cows, from twenty-five to thirty-five, 14*lb.* to the stone.

THE COMMON OX.

From this animal are derived the numerous varieties of cattle in various parts both of the old and the new continent. In its wild state it is distinguished by its great size, and the shagginess of its hair, which, about the head, neck, and shoulders, is sometimes so long as to reach almost to the ground. The horns of the wild Ox are short, sharp-pointed, strong, and stand distant from their bases. The general color of its body is either a dark or a yellowish brown. The limbs are strong, and the whole aspect savage and gloomy. Wild Oxen are found in the marshy forests of Poland, among the Carpathian Mountains, in Lithuania, and also in several parts of Asia.

In Lord Tankerville's park, at Chillingham, near Berwick-upon-Tweed, there is a breed of wild cattle, probably the only remains of the true and genuine breed of that species at present found in this kingdom.

At the first appearance of any person near them, these animals set off in full gallop, and, at the distance of two or three hundred yards, wheel round and come boldly up again, tossing their heads in a menacing manner. On a sudden they make a full stop at the distance of forty or fifty yards, and look wildly at the object of their surprise; but, on the least motion they all turn round, and gallop off again with equal speed, but not to the same distance, forming a smaller circle; and again returning with a bolder and more threatening aspect than before,

HUNTING WILD CATTLE.

they approach much nearer, probably within thirty yards, when they make another stand, and again gallop off. This they do several times, shortening their distance, and advancing nearer till they come within a few yards, when most persons consider it prudent to leave them, not choosing to provoke them further, as it is probable that, in a few turns more, they would make an attack.

The mode of killing these animals, as it was practised a few years ago, was the only remains of the grandeur of ancient hunting that existed in England. On notice being given that a wild Bull would be killed on a certain day, the inhabitants of the neighborhood assembled, sometimes to the number of a hundred horsemen, and four or five hundred foot, all armed with guns or other weapons. Those on foot stood upon the walls, or got into trees, while the horsemen rode off a Bull from the rest of the herd, until he stood at bay, when they dismounted and fired. At some of these huntings twenty or thirty shots have been fired before the animal was subdued. On such occasions the bleeding victim grew desperately furious, from the smarting of his wounds, and the shouts of savage joy echoing from every side. But from the number of accidents which happened, this dangerous

mode has not of late been practised; the park-keeper now generally kills them with a rifle-gun.

When the Cows calve, they hide their young-ones for a week or ten days in some sequestered retreat, and go to suckle them two or three times in a day. If any person comes near one of the Calves, it crouches close upon the ground, and endeavors to hide itself. This seems a proof of the native wildness of these animals, and it is corroborated by the following circumstance that happened to Dr. Fuller, the author of the History of Berwick, who found a hidden Calf two days old, very lean and weak. On his stroking its head it got up, pawed two or three times like an old Bull, bellowed very loud, went back a few steps, and bolted at his legs with all its force: it then began to paw again, bellowed, stepped back, and bolted as before. But being aware of its intentions, he moved aside, and it missed its aim, fell, and was so weak, that though it made several efforts it was not able to rise. It, however, had done enough; the whole herd was alarmed, and, coming to its rescue, obliged him to retire.

When any one of these animals happens to be wounded, or is grown weak and feeble through age or sickness, the rest of the herd set upon and gore it to death.

There is scarcely any part of the Ox that is not of some use to mankind. Boxes, combs, knife-handles, and drinking vessels, are made of the horns. The horns, when softened with boiling water, become so pliable as to be rendered capable of being formed into transparent plates for lanterns; an invention ascribed to King Alfred, who is said to have first used lanterns of this description, to preserve his candle time-measurers from the wind. Glue is made of the cartilages, gristles, and the finer pieces of cuttings and pairings of the hides, boiled in water till they become gelatinous and then dried. The bones of Oxen constitute a cheap substitute for ivory. The thinnest part of the calves-skins are manafactured into vellum. The blood is used as the basis of Prussian-blue. The hair is valuable in various manufactures, and the suet, fat, and tallow, are made into çandles. The utility of the milk and cream is well known.

OXEN OF THE GENTOOS.

From the circumstance of these animals furnishing the Gentoos

SPANISH BULL FIGHT.

with milk, butter, and cheese, their favorite food, that people entertain for them a superstitious veneration. There is scarcely a Gentoo to be found who would not, were he under a forced option, prefer sacrificing his parents or children to the slaying of a Bull or a Cow. Believing in the doctrine of transmigration, they are also alarmed at the idea of injuring the souls of those of their fellow-creatures that have taken their abode in these animal cases. This also tends to re-

SPANISH BULL FIGHT.

strain them from destroying, designedly, any of the brute creation, and to prevent them from dispossessing any being of that life which God alone can give; and they respect it in the flea equally with the elephant.

I cannot conclude the present article without a remark on the barbarous mode of slaughtering Oxen adopted in England. Drawn with his horns to a ring, this wretched animal has his head sometimes shattered to pieces by the butcher's axe before he falls. Three or four blows are often insufficient to deprive him of sensation, and it not unfrequently happens, that after the first or second blow he breaks loose from his murderers, and has to be seized and tied up afresh. Those who have heard his groans and bellowings on these occasions, will easily be convinced of the agony he undergoes. The Portuguese slay their Oxen by passing a sharp knife through the vertebræ of the neck into the spine, which causes instant death. Lord Somerville took with him to Lisbon a person to be instructed in this method of "laying down cattle," as it is termed there: this he did in the hope that the slaughtermen might be induced to adopt the same mode; but, with unheard-of stupidity and prejudice, they have hitherto refused to adopt it; nor will they probably ever do it, unless compelled by an act of the legislature. The Spaniards at home, and in their colonies, still keep up their barbarous custom of bull-fights.

THE ARNEE.

The horns of the Arnee are long, erect, and semilunar, flattened and annularly wrinkled, with smooth, round approaching points. A British officer, who found one of these animals in the woods in the country above Bengal, says, that its form seemed to partake of those of a Horse, Bull, and Deer; and that it was a very bold and daring animal.

THE ARNEE.

This is by far the largest animal of the cattle tribe that has hitherto been discovered, its usual height being from twelve to fifteen feet. It is an inhabitant of various parts of India north of Bengal, and is very seldom seen within the European settlements.

A herd of Arnees was, not many years ago, observed by a body of British troops, in one of the inland provinces of Hindostan, and they excited no small alarm in the whole corps. The herd no sooner perceived the men, advancing than they lifted up their heads, ran off to a small distance, then wheeled about, seemingly to reconnoitre; and advancing in a body as if to attack, had such a formidable and warlike

HUNTING THE ARNEE.

appearance and withal of a kind so entirely new, that no person present could form an idea what it might mean. Their horns, each at least two feet long, rose to a great height in the air, and did not permit the troops to see distinctly whether men were mounted on the animals or not; but in a short time they galloped off and disappeared.

In the year 1790 or 1791, the crew of the Hawkesbury East Indiaman, whilst she was going up the river Ganges, and at the distance of about fifty miles below Calcutta, observed one of these animals floating in the river, still alive. A boat was immediately hoisted out, in order to chase it. A noose was soon thrown across its horns; and the Arnee was dragged to the ship's side, hoisted on deck, killed, cut up, and afterwards cooked for the use of the ship's company, who found its flesh to be a most delicate food. The animal was as big as an immensely large ox, though it was believed, from its appearance, to have been not more than two years old. When cut up, it was found to weigh three hundred and sixty pounds per quarter, making one thousand four hundred and forty pounds of beef in the whole carcass.

THE ARNEE.

On an inquiry made by Dr. Anderson, of gentlemen who had been in India, respecting cattle of large size in that part of the world, some of them mentioned animals of this kind, which they said were kept by the native princes chiefly for parade, under the name of *fighting bullocks*. A convincing proof that these animals are kept by the princes, and probably for parade is obtained from an Indian painting, in which

three of them are very distinctly delineated. This painting represents one of those entertainments that are given by the Indian princes for the amusement of their subjects, similar to the fights that were exhibited for the same purpose on the Arena at Rome. An Elephant is figured in the act of contending with two tigers; and, among the number of objects assembled, there are three Arnees; these appear to be waiting apart, each under the guidance of a leader, who is seated upon his back, and has hold of a bridle in the animal's mouth. This painting is the property of Gilbert Innes, Esq., of Stow, near Edinburgh.

THE AMERICAN BISON.

The American Bison has short rounded horns, pointing outwards. It is covered, in many parts, with long shaggy hair, and has a high protuberance on the shoulders. The fore-parts of the body are excessively thick and strong; and the hinder parts are compartively very slender.

In the interior regions of North America immense herds of Bisons are frequently seen. They herd in the open savannahs morning and evening; and, retire during the sultry parts of the day, to rest near shady rivulets and streams of water. In the moist land they frequently leave so deep an impression of their feet, as to be traced and shot by the artful Indians. In this undertaking, however, it is necessary that the men should be particularly careful,

THE AMERICAN BISON.

for, when they are only wounded the animals become excessively furious. The hunters go against the wind, as the faculty of smell in the Bisons is so exquisite, that the moment they get scent of their enemy they retire with the utmost precipitation. In taking aim the hunter directs his piece to the hollow of the shoulder, by which means he generally brings down the animal at one shot; but if not killed, the Bison frequently runs upon him, and with its horns and hoofs, tears him in pieces, or tramples him to death.

These animals are so amazingly strong, that when they flee through the woods from a pursuer, they frequently brush down trees as thick as a man's arm; and, be the snow ever so deep, such are their strength and agility, that they are able to plunge through it much faster than the swiftest Indian can run in snow-shoes. "To this (says Mr. Hearne) I have many times been an eye-witness. I once had the vanity to think that I could have kept pace with them; but though I was at that time celebrated for running fleetly in snow-shoes, I soon found that I was no match for the Bisons, notwithstanding they were then plunging through such deep snow, that their bellies made a trench as large as if many heavy sacks had been hauled through it."

In the western part of the United States the hunting of the Bison is a common employment of the natives. They draw up in a large square, and commence their operations by setting fire to the grass, which, at certain seasons, is very long and dry. As the fire burns onward they advance, closing their ranks as they proceed. The animals, alarmed by the light, gallop confusedly about till they are hemmed in so close, that frequently not a single beast is able to escape.

ENRAGED BISON.

One of the most exciting sports in the world, is to hunt them

HUNTING ON HORSEBACK.

on horseback, armed with a rifle. The hunters approach with the wind,

ACCIDENT IN BISON HUNTING.

and, as soon as the animals smell them, they instantly seek to escape; and the sight of the horses increases their fear, but the majority of the Bisons are, at a certain time of the year, so fat and unwieldy, as easily to be enticed to slacken their pace. As soon as the men overtake them, they endeavor to strike the crescent just above the ham, in such a manner as to cut through the tendons, and render them afterwards an easy prey.

The hunting of these animals is also common in several parts of South America. It commences with a sort of festivity, and ends in an entertainment, at which one of their carcasses supplies the only ingredient. As soon as a herd of Bisons is seen on the plain, the most fleet and active of the horsemen prepare to attack them, and, descending in the form of a widely-extended crescent, they hunt them in all directions. After a while the animals become so weary, that they seem ready to sink under their fatigue; but the hunters, still urging them to flight by their loud cries, drive them at last from the field. Such as are unable to exert the necessary speed for escape are slaughtered.

The sagacity which the Bisons exhibit in defending themselves against the attacks of Wolves is admirable. When they scent the approach of a drove of those ravenous creatures, the herd throws itself into the form of a circle, having the weakest in the middle, and the strongest ranged on the outside, thus presenting an impenetrable front of horns.

"There is (says Mr. Turner, who resided long in America) a singular and affecting trait in the character of this animal when a Calf.

Whenever a Cow Bison falls by the murdering hand of the hunters, and happens to have a Calf, the helpless young-one, far from attempting to escape, stays by its fallen Dam, with signs expressive of strong natural affection. The Dam thus secured, the hunter makes no attempt on the Calf, (knowing that to be unnecessary,) but proceeds to cut up the carcass: then, laying it on his horse, he returns home followed by the Calf, which thus instinctively attends the remains of its Dam. I have seen a single hunter ride into town followed in this manner by three Calves, all of which had just lost their Dams by this cruel hunter."

AMERICAN BISON—FEMALE IN THE DISTANCE.

This gentleman is of opinion that the Bison is superior even to our domestic cattle for the purposes of husbandry, and has expressed a wish to see this animal domesticated on the English farms. He informs us that a farmer, on the great Kenawha, broke a young Bison to the plough; and, having yoked it with a steer taken from his tame cattle, it performed its work to admiration. But there is another property in which the Bison far surpasses the ox, and this is his strength. "Judging from the extraordinary size of his bones, and the depth and formation of his chest, (continues this gentleman,) I should not think it unreasonable to assign nearly a double portion of strength to this powerful inhabitant of the forest. Reclaim him, and you gain a capital quadruped, both for the draught and for the plough: his activity peculiarly fits him for the latter, in preference to the ox."

SKULL OF OLD MALE AMERICAN BISON.

The uses of the Bison when dead are various. Powder flasks are made of the horns. The skins form an excellent buff-leather, and, when dressed with the hair on, serve the Indians for clothes, shoes,

and blankets, and find them light, warm, and soft. The flesh is used as food, and the bunch on the shoulders and the tongue are esteemed great delicacies. The bulls, when fat, frequently yield each a hundred and fifty pounds of tallow, which forms a considerable article of commerce. The hair is spun into gloves, stockings and garters, that are very strong, and look as well as those made of the finest sheep's wool. Governor Pownal assures us that there may be manufactured from it a most luxurious kind of clothing.

THE EUROPEAN BISON.

There can be little doubt that the *Bison jubatus* of Pliny (book viii. c. 15, and xxviii. c. 10), which he seems to distinguish from the *Urus*, was the *European Bison* or *Aurochs;* and though in the fifteenth chapter of the eighth book he mentions the tradition of a wild beast in Pæonia called a *Bonasus*, after he has dismissed his *Bisontes jubati*, and with every appearance of a conclusion on his part that the *Bonasus*, and *Bison* were not identical, his own description, when compared with that of Aristotle, will leave little doubt that the *Bison jubatus* and *Bonasus* of Pliny and others, the Βόνασος or Βόνασος of Aristotle (for the word is written both ways), and the Βίζων of Oppian, were no other than the *European Bison*, the *Aurochs* (Auerochs) of the Prussians, the *Zubr* of the Poles, the *Taurus Pæonius*, &c. of Johnston and others, *l' Aurochs* and *le Bonasus* of Buffon, *Bos Urus* of Boddaert, and *Bos Bonasus* of Linnæus.

THE EUROPEAN BISON ATTACKED BY WOLVES.

Cuvier considers it as certain that this animal, the largest, or at least the most massive of all existing quadrupeds after the Rhinoceros, an animal still to be found in some of the Lithuanian forests, and perhaps in those of Moldavia, Wallachia, and the neighborhood of the Caucasus, is a distinct species which man has never subdued; nor do we think that any one who takes the trouble to consider the evidence on which Cuvier's conclusion was founded will be of a

different opinion. Following out this subject with his usual industry and ability, that great naturalist goes on to state (*Ossemens Fossiles*) that if Europe possessed a *Urus*, a *Thur* of the Poles, different from the *Bison* or the *Aurochs* of the Germans, it is only in its remains that the species can be traced; such remains are found, in the skulls of a species of Ox different from the Aurochs, in the superficial beds of certain districts. This Cuvier thinks must be the true *Urus* of the ancients, the original of our domestic Ox, the stock perhaps whence our wild cattle descended; while the Aurochs of the present day is nothing more than the Bison or Bonasus of the ancients, a species which has never been brought under the yoke. [See Ox and Urus.]

SKULL OF OLD EUROPEAN BISON.

Skull of European Bison, front view.

(Profile of the same.)

This ancient species is fast following its extinct congener the *Urus*. Pallas observes, that it is remarkable that the Aurochs does not exist in any of the vast forests of Russia and Northern Asia, whence (if it had penetrated therein) hardly any thing could have eradicated it. As late as the reign of Charlemagne it was not rare in Germany, but the range of the species is now nearly confined to the mountainous country between the Caspian and Black Seas.

Cuvier in the first edition of his "Ossemens Fossiles," considered the fossil skulls of Oxen found in Europe as belonging to the Aurochs, and those of Siberia as the crania of an extinct species; but, in his last, he declares that he has recognized both as the skulls of the same species, and opens the question. These skulls, though they differ scarcely in any thing from those of the Aurochs, he inclines to think the remains of a different species. He gives the portrait of a cranium in the Museum at Paris, here copied, so like, as he observes, to

the living Aurochs, that the most practised eye can scarcely distinguish it; but so fresh that he seems to think it recent, and that it owes its fossil appearance to its having been much weathered. Lyell states that the bones of the Bison have been found at North Cliff, in the county of York, in a lacustrine formation, in which all the land and fresh-water shells, thirteen in number, can be identified with species and varieties now existing in that county.

THE BUFFALO.

The Buffalo, in its general form, has a great resemblance to the common Ox; but it differs from this animal in its horns, and in some particulars of its internal structure. It is larger than the Ox; the head is also bigger in proportion, the forehead higher, and the muzzle longer. The horns are large, and of a compressed form, with the exterior edge sharp: they are straight for a considerable length from their base, and then bent slightly upward. The general color of the animal is blackish, except the forehead and the tip of the tail, which are of a dusky white. The hunch is not, as many have supposed it a large fleshy lump, but it is occasioned by the bones that form the withers being continued to a greater length than in most other animals.

Buffaloes are natives of the warmer parts of India and Africa; but they have been introduced into some of the countries of Europe, where they are now naturalized. In Italy they constitute an essential part both of the riches and food of the poor. They are employed in agriculture; and butter and cheese are made from their milk. These animals are very common in Western Hindostan. They are fond of wallowing in mud, and will swim over the broadest rivers. During inundations, they are frequently observed to dive to the depth of ten or twelve feet, in order to force up with their horns the aquatic plants; and these they eat while swimming.

In many parts of the East, as well as in Italy, Buffaloes are domesticated. It is said to be a singular sight to observe, morning and evening, large herds of them cross the Tigris and Euphrates. They proceed, all wedged against each other, the herdsman riding on one one of them, sometimes standing upright, and sometimes couching down; and, if any of the exterior ones are out of order, he steps lightly from back to back, to drive them along.

A singular circumstance relative to these animals, is recorded by the navigators who completed the voyage to the Pacific Ocean, begun by Captain Cook. When at Pulo Condore they procured eight Buffaloes, which were to be conducted to the ships by ropes put through their nostrils and round their horns; but when these were brought within sight of the ship's people, they became so furious, that some of them tore out the cartilage of their nostrils, and set themselves at liberty; and others broke down the shrubs to which it was found necessary to fasten them. All attempts to get them on board would have proved fruitless, had it not been for some children, whom the

animals would suffer to approach them, and by whose puerile management their rage was quickly appeased; and, when the animals were brought to the beach, it was by their assistance, in twisting ropes around their legs, that the men were enabled to throw them down, and by that means get them into the boats. And what appears to have been no less singular than this circumstance was, that they had not been a day on board before they became perfectly gentle.

The skin and horns of the Buffalo are its most valuable parts: the former is very strong and durable, and consequently is well adapted for various purposes in which a strong leather is required. The latter have a fine grain, are strong, and bear a good polish; and are, therefore, much valued by cutlers and other artificers. The flesh is said to be excellent eating; and it is so free from any disagreeable smell or taste, that it nearly resembles beef. The flesh of the Cows, when some time gone with young, is esteemed the finest; and the young Calves are reckoned by the Americans the greatest possible delicacy.

THE CAPE BUFFALO.

THE CAPE BUFFALO.

The fore-parts of this animal are covered with long, coarse, and black hair. The horns are thick, and rugged at the base, sometimes measuring three feet in length, and lying so flat as to cover almost all the top of the head. The ears are large and slouching. The body and limbs are very thick and muscular; and the animal is above eight feet long and six in height. The head hangs down, and bears a most fierce and malevolent aspect.

The savage disposition, large size, and enormous strength of these animals, render them too well known in all the countries which they inhabit. In the plains of Caffraria they are so common, that it is by no means unusual to see a hundred and fifty or two hundred of them in a herd. They generally retire to the thickets and woods in the day-time, and at night go out into the plains to graze. Treacherous in the extreme, they frequently conceal themselves among the trees, and there stand lurking till some unfortunate passenger comes by, when they at once rush out into the road, and attack the traveller, who has no chance to escape but by climbing up a tree, if he is fortunate enough to be near one. Flight is of no avail: he is speedily overtaken by the furious beast, who, not contented with throwing him down and killing him, stands over him even for a long time after

wards, trampling him with his hoofs, and crushing him with his knees; and not only mangles and tears the body to pieces with his horns and teeth, but likewise strips off the skin, by licking it with his tongue. Nor does he perform all this at once, but often retires to some distance from the body, and returns with savage ferocity to gratify afresh his cruel disposition.

As Professor Thunburg was travelling in Caffraria, he and his companions had just entered a wood, when they discovered a large old male Buffalo, lying quite alone, in a spot, that for the space of a few square yards, was free from bushes. The animal no sooner observed the guide, who went first, than, with a horrible roar, he rushed upon him. The fellow turned his horse short round behind a large tree, and the Buffalo rushed forward to the next man, and gored his horse so dreadfully in the belly, that it died soon afterwards. These two men climbed into trees, and the furious animal made his way towards the rest, who were approaching, but at some distance. A horse without a rider was in the front; as soon as the Buffalo saw this animal he became more outrageous than before, and attacked him with such fury that he not only drove his horns into the horse's breast, but even out again through the very saddle. At this moment the Professor happened to come up, but from the narrowness of the path, having no room to turn round, he was glad to abandon his horse, and take refuge in a tree. The Buffalo, however had finished; for, after the destruction of the second horse, he turned suddenly round, and galloped away.

Some time after this, the Professor and his party espied an extremely large herd of Buffaloes grazing on a plain. Being now sufficiently apprised of the disposition of these animals, and knowing that they would not attack any person in the open plains, they approached within forty paces, and fired amongst them. The whole troop, notwithstanding the individual intrepidity of the animals, surprised by the sudden flash and report, turned about, and made off towards the woods. The wounded Buffaloes separated from the rest of the herd; and among these was an old bull Buffalo, which ran with fury towards the party. They evaded this attack, and the animal galloping close past them, soon afterwards fell. Such, however, had been his strength, that, notwithstanding the ball had entered his chest, and had penetrated nearly through his body, he had run at full speed several hundred paces after he had been wounded.

The Cape Buffalo is frequently hunted, both by Europeans and by the natives of South Africa. In Caffraria he is generally killed by means of javelins, which the inhabitants use with considerable dexterity. When a Caffre has discoverd the place where several Buffaloes are collected together, he blows a pipe, made of the thigh-bone of a sheep, the sound of which is heard at a great distance. The moment his comrades hear this notice they run to the spot, and, surrounding the animals, which they take care to approach by degrees, lest they should alarm them, throw their javelins at them. This is generally done with so sure an aim, that out of eight or twelve, it rarely happens that a single one escapes. When the chase is ended, each man cuts off and takes away his share of the game.

Some Europeans at the Cape once chased a Buffalo, and having driven him into a narrow place, he turned round, and instantly pushed at one of his pursuers, who had on a red waistcoat. The man, to save his life, ran to the water, plunged in, and swam off: the animal followed him so closely, that the poor fellow had no alternative but that of diving. He dipped over head, and the Buffalo, losing sight of him, swam on towards the opposite shore, three miles distant, and, as was supposed, would have reached it, had he not been shot by a gun from a ship lying at a little distance. The skin was presented to the governor of the Cape, who had it stuffed, and placed it among his collection of curiosities.

Like the Hog, this animal is fond of wallowing in the mire. His flesh is lean, but juicy, and of a high flavor. The hide is so thick and tough, that targets, musket-proof, are formed of it; and, even while the animal is alive, it is said to be in many parts impenetrable to a leaden musket-ball: balls hardened with a mixture of tin are, therefore, always used, and even these are often flattened by the resistance. Of the skin the strongest and best thongs for harness are made. The Hottentots, who never put themselves to any great trouble in dressing their victuals, cut the Buffalo's flesh into slices, and then smoke, and at the same time half broil it, over a few coals. They also frquently eat it in a state of putrefaction. They dress the hides by stretching them on the ground with stakes, afterwards strewing them over with warm ashes, and then with a knife scraping off the hair.

THE YAK.

The Yak inhabits Tartary. Of this animal in a native state little or nothing is known. The name of "grunniens," or grunting, is derived from the peculiar sound that it utters. The tail of the Yak is very long and fine, and is used in India as a fan or whisk to keep off the mosquitos. The tail is fixed into an ivory or metal handle, and is then called a chowrie. Elephants are sometimes taught to carry a chowrie, and wave it about in the air, above the heads of those who ride on its back. In Turkey the tail is called a "Horse-tail," and is used as an emblem of dignity.

From the shoulders of the Yak a mass of long hair falls almost to the ground, something like the mane of a Lion. This hair is applied to various purposes by the Tartars. They weave it into cloth, of which they not only make articles of dress, but also tents, and even the ropes which sustain the tents.

THE MUSK OX.

The Musk Ox is a native of North America, and is not very unlike the Yak in appearance. It is covered with very long hair, which reaches almost to the ground. Its flesh is tolerably good when fat,

but at other times it smells strongly of musk. The horns of this animal are united together at their base, forming a kind of shield or helmet covering the forehead. When the hunters wish to shoot the Musk Ox they conceal themselves, and fire without permitting the

THE MUSK OX.

Oxen to see them. The poor animals seem to fancy that the report of the guns is thunder, and crowd together in a mass, so that they afford a good mark. If, however, they catch sight of one of their assailants, they instantly charge at him, and then are very dangerous enemies. Both this animal and the Yak are small, scarcely equalling in size the small Highland cattle, but the thick hair which covers them makes them look larger then they really are.

THE ZEBU OR BRAHMIN BULL.

This animal is a native of India. It is a very conspicuous animal on account of the hump on its shoulders. There are different breeds of it, some larger than the English cattle, and some hardly larger than an ordinary Hog. The Hindoos treat it with great reverence, and will not suffer it to be molested. It is in consequence so tame and familiar that it will often walk down the streets,

GROUP OF ZEBUS.

examine the shops, and perhaps help itself to some sweetmeats; or it will lie down in the narrow street; but no one must disturb it, they must either proceed by another road, or wait until the sacred animal is pleased to rise.

THE ZEBU.

With singular inconsistency, the Hindoo, although he honors the Bull with such absurd reverence, yet he has no pity on the Ox. While the consecrated Bull wanders with impunity through the streets, walks into shops, (china shops or otherwise,) and resents with a peevish push of its horns the slightest affront, the Ox is fastened to the plough, urged on by the goad, and put to every kind of labor. The Zebu-cow, although not quite so well treated as the Bull, yet enjoys more forbearance than the Ox.

The general shape of the Brahminy Bull, which is the sacred Bull in most parts of India, and especially in the valley of the Ganges, may be understood from the figure. In Benares, and those other cities which are crowded with the most wealthy and devout Hindoos of high caste, these animals are exceedingly numerous, thronging the streets, and the courts, and areas of the temples. They are fed to the utmost profusion, and they are very fat, indolent, and inoffensive. When left without these attentions they are smaller and much more active, but they have been so long domesticated, or rather under the protection of the people, that there are many varieties in appearance. When they are fat, the hump on the shoulders and the dewlap are very much produced, and in all conditions they have the skin of the neck furrowed with transverse wrinkles. Their general color is dun, passing into blackish on the upper part, and whitish on the under. There are many varieties of these hunch-backed ones in India, but it is not easy to say which is the original race, or whether those which are found wild be in a state of nature, or have been left in the changes of society which the country has undergone. These humped Oxen have the voice less deep than the others, and the form of the hind quarters and the insertion of the tail are different from the European varieties.

BELLUAE.

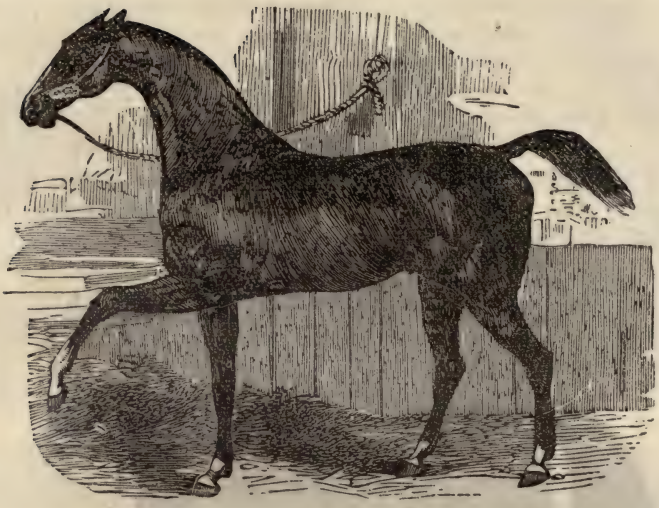
THE animals of the Linnean order Belluæ, have obtuse front-teeth; and their feet are armed with hoofs, in some species whole or rounded, and in others obscurely lobed or subdivided.

OF THE HORSE TRIBE.

THE generic characters of the Horse are six parallel front-teeth in the upper, and six in the lower jaw, the latter somewhat projecting. There is also one canine-tooth on each side, in both jaws, remote from the rest.

Various and essential are the services performed to mankind, by the animals of this tribe. In many countries, they are almost the only beasts of draught and burden that are employed. They are gregarious, and in a wild state inhabit the most retired deserts. The mode in which they fight is by biting, and by kicking with their hind feet; and they have the singular property of breathing only through the nostrils.

Of the six ascertained species of Horses, only one has yet been discovered on the New Continent, in a perfectly wild state, and this animal has cloven hoofs: it is an inhabitant of the mountains of South America.



THE COMMON HORSE.

The Horse is a native of several districts of Asia and Africa; and in the southern parts of Siberia large herds of these animals are

WILD HORSES.

occasionally seen. They are extremely swift, active, and vigilant; and have always a sentinel, who, by a loud neigh, gives notice to the herd of the approach of danger, on which they gallop off with astonishing rapidity.

In Ukraine, where wild Horses are often found, they are rendered no otherwise serviceable to man than as food. The wild Horses on each side of the Don, are the offspring of the Russian Horses that were employed at the siege of Asoph in the year 1697, when, for want of forage, they were turned loose. They have relapsed into a state of nature and have become as shy and timid as the original

SOUTH AMERICAN HORSES RIDDEN BY INDIANS OF THE PAMPAS.

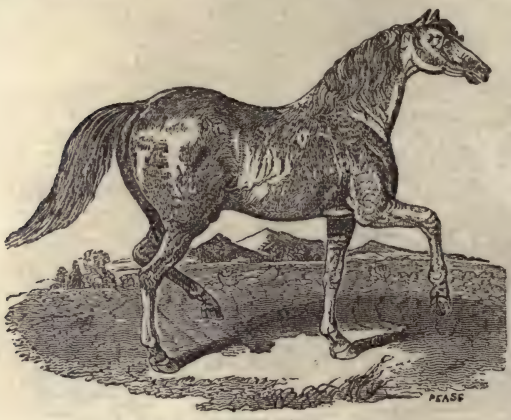
savage breed. The Cossacks chase them, but always in the winter, by driving them into the valleys filled with snow, into which they plunge and are caught. Their excessive swiftness is such as entirely to exclude every other mode of capture.

The Horses of South America are of Spanish origin, and entirely of the Andalusian breed. They are now become so numerous as to live in herds, some of which are said to consist of ten thousand. As soon as they perceive domestic Horses in the fields, they gallop up to them, caress, and, by a kind of grave and prolonged neighing, invite them to run off. These are soon seduced, unite themselves to the independent herd, and depart along with them; and it not unfrequently happens that travellers are stopped on the road by the effect of this desertion.

The Horse, in an improved state, is found in almost every part of the globe, except perhaps, within the Arctic Circle; and its reduction and conquest may be considered as the greatest acquisition from the animal world, that the art and industry of man have ever made. As domestics, their docility and gentleness are unparalleled, and they contribute more to the convenience and the pride of man than all other animals put together.

In Arabia they are found in their highest perfection, as little degenerated in their race or powers as the Lion or Tiger. To the Arabs they are as dear as their own children; and the constant intercourse,

arising from living in the same tent with their owner and his family, creates a familiarity that could not otherwise be effected, and a tractability that arises only from the kindest usage. They are the fleetest animals of the desert, and are so well trained as to stop in their most rapid course by the slightest check of the rider. Unaccustomed to the spur, the least touch with the foot sets them again in motion; and so obedient are they to the rider's will, as to be directed in their course merely by the motion of a switch. They form the principal riches of many of the Arab tribes, who use them both in the chase and in their plundering expeditions. In the day-time they are generally kept saddled at the door of the tent, prepared for any excursion their master may take. They never carry heavy burdens, nor are employed on long journeys. Their constant food, except in spring, when they get a little grass, is barley; and this they are suffered to eat only during the night. The Arab, his wife, and children, always lie in the same apartment with the Mare and Foal, who, instead of injuring, suffer the children to rest on their bodies and necks, without in the least incommoding them: the gentle animals even seem afraid to move, lest they should hurt them. The Arabs never beat nor correct their horses, but always treat them with the utmost kindness.



THE ARABIAN HORSE.

The whole stock of a poor Arabian of the desert consisted of a Mare; this the French consul at Saïd offered to purchase, with an intention to send her to Louis the Fourteenth. The Arab, pressed by want, hesitated a long time, but at length consented, on condition of receiving a considerable sum of money, which he named. The consul wrote to France for permission to close the bargain, and having obtained it, sent immediately to the Arab the information. The man, so poor as to possess only a miserable rag, as a covering for his body, arrived with his magnificent courser. He dismounted, and, looking first at the gold and then steadfastly at his Mare, heaved a deep sigh: —"To whom is it (he exclaimed) that I am going to yield thee up? To Europeans! who will tie thee close, who will beat thee, who will render thee miserable! Return with me, my beauty! my jewel! and rejoice the hearts of my children!" As he pronounced the last words, he sprang upon her back, and was out of sight almost in a moment. What an amiable and affecting sensibility in a man, who, in the midst of distress, could prefer all the disasters attendant on poverty, rather than surrender the animal that he had long fostered in his tent, and had been the child of his bosom, to what he supposed inevitable

EASTERN HORSES. (CIRCASSIAN.)

misery! The temptation even of riches, and a relief from poverty, had not sufficient allurements to induce him to so cruel an act.

"The Horses of the Bedouin Arabs, whose lives (says Sonnini) are spent in traversing the scorching sands, are able, notwithstanding the fervency of the sun, and the suffocating heat of the soil over which they pass, to travel for three days without drinking, and are contented with a few handfuls of dried beans, given once in twenty-four hours. From the hardness of their labor and diet, they are, of course, very lean; yet they preserve incomparable vigor and courage."

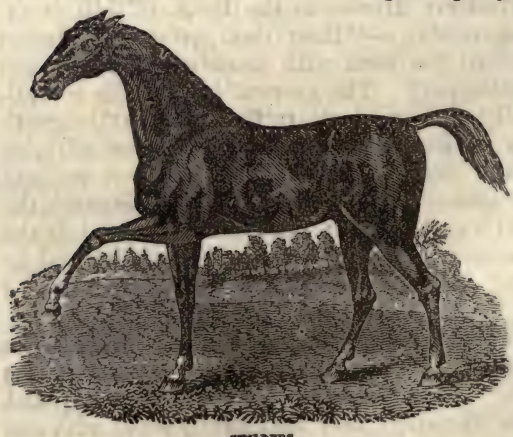
The description of the Eastern Horses in the Book of Job, is exceedingly poetical and expressive:—"Hast thou given the Horses strength? Hast thou clothed his neck with thunder? Canst thou make him afraid as a grasshopper? The glory of his nostrils is terrible. He paweth in the valley, and rejoiceth in his strength: he goeth on to meet the armed men: He mocketh at fear, and is not affrighted; neither turneth he back from the sword. The quiver rattleth against him, the glittering spear, and the shield. He swalloweth the ground with fierceness and rage; neither believeth he that it is the sound of the trumpet. He saith among the trumpets, ha, ha; and he smelleth the battle afar off, the thunder of the captains, and the shouting."

In Norway, where most of the roads are impassable for carriages, the Horses are remarkably sure-footed; they skip along over the stones and are always full of spirit. Pontopiddan says, when they go up and down a steep cliff, on stones like steps, they first gently tread with one foot, to try if the stone be firm; and in this they must be left entirely to their own management, or the best rider in the world would run

the risk of breaking his neck. When they have to descend steep and slippery places, and such frequently occur, they, in a surprising manner, like the asses of the Alps, draw their hind legs together under their bodies, and thus slide down. They exhibit much courage when they contend, as they are often under the necessity of doing, with wolves and bears, but particularly with the latter. When the Horse perceives any of these animals near him, and has a Mare or Foal with him, he first puts these behind out of the way, and then furiously attacks his enemy with his fore legs, which he uses so expertly as generally to prove victorious. Sometimes, however, the bear, which has twice the strength of his adversary, gets the advantage, particularly if the Horse make any attempt, by turning round to strike him with his hind legs; for the bear then instantly closes upon him, and keeps such firm hold as scarcely to be shaken off: the Horse in this case gallops away with his enemy, till he falls down and expires from loss of blood.

ENGLISH HUNTER.

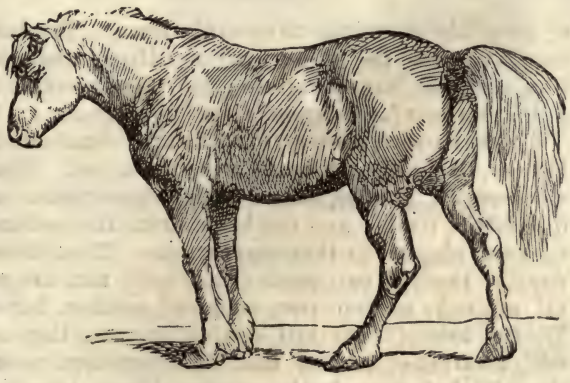
There are few countries that can boast a breed of Horses so excellent as our own. The English hunters are allowed to be among the noblest, most elegant, and useful animals in the world. Whilst the French, and many other European nations, seem attentive only to spirit and parade, we train ours principally for strength and dispatch. Theirs, however, have the advantage of never coming down before, as ours do, because, in breaking, they put them more on their haunches, while, we, perhaps, throw them too much forward. With unwearied attention, however, to the breed, and repeated trials of all the best Horses in different parts of the world, ours are now become capable of performing what no others can. Among racers the English had one (Childers) which has been known to pass over eighty-two feet and



CHILDERS.

HORSE LEAPING OVER TIGER, WHICH HIS RIDER SPEARS.

a half in a second of time, a degree of fleetness perhaps unequalled by any other Horse. In the year 1745, the post-master of Stretton rode, on different Horses, along the road to and from London no less than two hundred and fifteen miles in eleven hours and a half, a rate of above eighteen miles an hour; and in July, 1788, a Horse belonging to a gentleman of Bilter-square, London, was trotted for a wager, thirty miles in an hour and twenty five minutes, which is at the rate of more than twenty-one miles in an hour. In London there have been instances of a single Horse drawing, for a short space the weight of three tons: and some of the pack-horses of the north usually carry burdens that weigh upwards of four hundred pounds. But the most remarkable proof of the strength of the British Horses is in their mill Horses, some of which have been known to carry, at one load, thirteen measures of corn, that in the whole would amount to more than nine hundred pounds in weight.



THE DRAY HORSE.

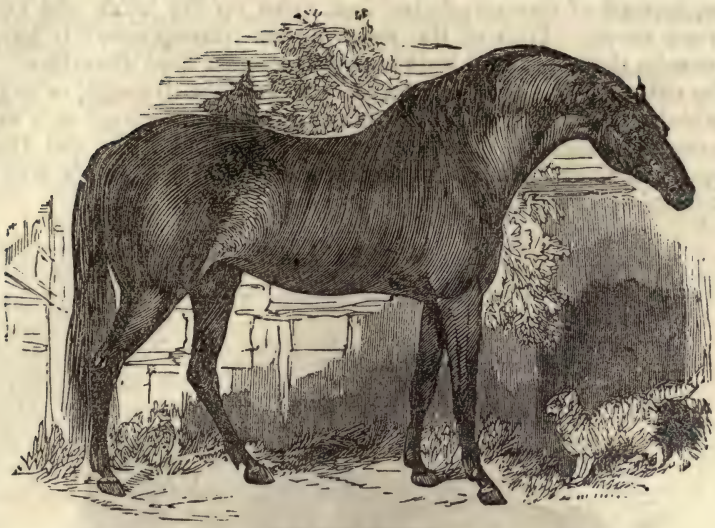
Though endowed with vast strength, and with great powers of body, such is the disposition of the Horse, that it rarely exerts

either to its master's prejudice: on the contrary, it will endure fatigue, even to death, for our benefit. Providence seems to have implanted in him a benevolent disposition, and a fear of the human race, with, at the same time, a certain consciousness of the services we can render him. One instance, however, has been mentioned, of recollection of injury, and of an attempt to revenge it. A baronet, one of whose hunters had never tired in the longest chase, once encouraged the cruel thought of attempting completely to fatigue him. After a long chase, therefore, he dined, and again mounting, rode him furiously among the hills. When brought to the stable, the animal appeared exhausted, and he was scarcely able to walk. The groom, possessed of more feeling than his brutal master, could not refrain from tears at the sight

RACE HORSE ECLIPSE, WITH TAIL DOCKED.

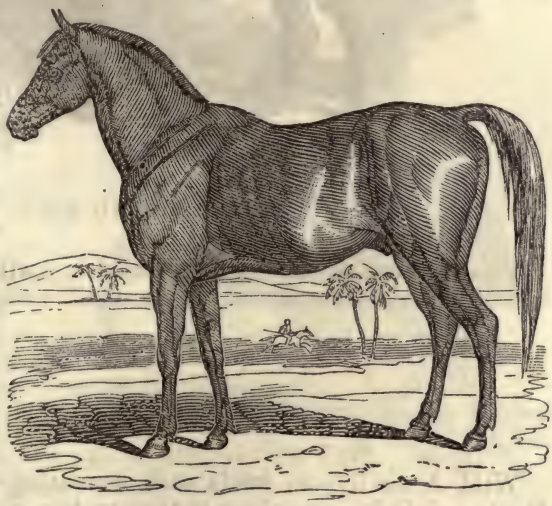
of so noble an animal thus sunk down. The baronet sometime afterwards entered the stable, and the Horse made a furious spring upon him, and had not the groom interfered, would soon have put it out of his power of ever again misusing animals.

The barbarous practice of docking the tails, and clipping the hair of Horses, is in this country very prevalent. The former, principally with wagon Horses, under the pretence that a bushy tail collects the dirt of the roads; and the latter, from the notion that they are rendered more elegant in their appearance. Thus, from ideal necessity, we deprive them of two parts of the body that are principally instrumental, not only to their own ease and comfort, but to their utility to us. By the loss of their tail, during summer they are perpetually teased with swarms of insects, that either attempt to suck their blood, or to deposit their eggs in the rectum: these they have now no means of lashing off; and in winter they are deprived of a necessary protection against the cold.



RACE HORSE GODOLPHIN.

But, of all others, the custom that we have adopted, of nicking them, is the most useless and absurd. It is a heart-rending sight to go into the stable of a horse-dealer, and there behold a range of fine and beautiful steeds, with their tails cut and slashed, tied up by pulleys to give them force, suffering such torture that they sometimes never recover from the savage gashes they received. And for what is all this done?—that they may hold their tails somewhat higher than they otherwise would, and be for ever afterwards deprived of the power of moving the joints of them as a defence against flies!



HORSE WITH TAIL NICHED.

I have another abuse to notice, observable in those who shoe Horses. The blacksmith, in order to save himself a little trouble, will frequently apply the shoe red-hot to the Horse's foot, in order that it may burn for itself a bed in the hoof. "The utmost severity (says Lord Pembroke) ought to be inflicted on all those who clap shoes on hot. This unpardonable laziness of farriers in making feet thus to fit

shoes, instead of shoes to fit the feet, dries up the hoofs, and utterly destroys them." It is of the mostruinous consequence: it hardens and cracks the hoofs, and induceseven the most fatal disorders.

The natural diseases of Horses are few, but our ill-usage, or neglect, or, which is very frequent, our over-care of them, brings on a numerous train, which are often fatal. They sleep but little, and this, in general, on their legs. If properly treated, these animals will live from forty to fifty years.

THE SHETLAND PONY.

This is a small kind of Horse, found in a wild state in the Shetland Isles. When domesticated, they are still vicious and intractable.

THE ASS.

Wild Asses live in herds, each consisting of a chief, and several Mares and Colts, sometimes to the number of twenty. They are excessively timid, and provident against danger. A male takes on him the care of the herd, and is always on the watch. If they observe a hunter, who by creeping along the ground has got near them, the sentinel takes a great circuit, and goes round and round him, as if discovering somewhat to be apprehended. As soon as the animal is satisfied, he rejoins the herd, which sets off with great precipitation.

Sometimes his curiosity costs him his life; for he approaches so near as to give the hunter an opportunity of shooting him. The senses of hearing and smelling in these animals are most exquisite; so that they are not in general to be approached without the utmost difficulty. "The wild Asses did stand in the high places," says the prophet Jeremiah; "they snuffed up the wind like dragons." The Persians catch these animals, and break them for the draught. They make pits, which they fill about half up with plants: into these the Asses fall without bruising themselves, and are taken thence alive. When completely domesticated they are very valuable, and sell at a high price, being at all times celebrated for their amazing swiftness.

THE ASS.

The saltest plants of the desert, such as the atriplex, kali, and chenopodium, and also the bitter milky tribes of herbs, constitute the food of the wild Asses. These animals also prefer salt water to fresh. This is exactly comformable to the history given of this animal in the Book of Job; for the words "barren land," expressive of his dwelling, ought to be rendered *salt places*. The hunters generally lie in wait for the Asses near the ponds of brackish water, to which they resort to drink.

THE WILD ASS.

These animals are found wild in the mountainous deserts of Tartary, the southern districts of India and Persia, and in some parts of Africa. In their native state they exhibit an appearance far superior, both in point of vivacity and beauty, to the animals of the same species in a state of domestication.

The Ass, like the Horse, was imported into America by the Spaniards: and this country seems to be peculiarly favorable to this race of animals; for, where they have run wild, they have multiplied in such numbers, that in some places they have become quite a

nuisance. In the kingdom of Quito, the owners of the grounds where they are bred suffer all persons to take away as many as they choose, on paying a small acknowledgment, in proportion to the number of days the sport of hunting them lasts. They catch them in the following manner:—A number of persons go on horseback, and are attended by Indians on foot. When arrived at the proper places, they form a circle in order to drive the Asses into some valley, where, at full speed, they throw the noose, and endeavor to halter them. The creatures, finding themselves enclosed, make furious efforts to escape; and, if only one forces his way through, they all follow with irresistible impetuosity. However, when noosed, the hunters throw them down, and secure them with fetters, and thus leave them till the chase is over. Then, in order to bring them away with greater facility, they pair them with tame Asses; but this is not easily performed, for they are so fierce that they often wound the persons who undertake to manage them.

DOMESTICATED ASS.

They have all the swiftness of Horses, and neither declivities nor precipices can retard their career. When attacked, they defend themselves by their heels and mouth with such address, that, without slackening their pace, they often maim their pursuers. But the most remarkable property in these creatures is, that, after carrying their first load, their celerity leaves them, their dangerous ferocity is lost, and they soon contract the stupid look and the dullness peculiar to their species. It is also observable that these creatures will not permit a Horse to live among them. They always feed together; and, if a Horse happen to stray into the place where they graze, they fall upon him, and, without even giving him the choice of flying, bite and kick him till they leave him dead on the spot.

The manner in which the Asses descend the precipices of the Alps or the Andes is truly extraordinary. In the passes of these mountains there are often on one side lofty eminences, and on the other frightful abysses; and, as these generally follow the direction of the mountain, the road, instead of lying on a level, forms, at every little distance, steep declivities of several hundred yards downward. Places of this description can only be descended by Asses; and the animals themselves, by the caution that they use, seem to be sensible of the danger to which they are exposed. When they come to the edge of one of the descents, they stop of themselves, without being checked by the rider; and, if he inadvertently attempt to spur them on, they continue immovable. They seem all this time ruminating on the danger that lies before them, and preparing themselves for the encounter. They not only attentively view the road, but tremble at the danger. Having

prepared for their descent, they place their fore-feet in a posture as if they were stooping themselves; they then also put their hinder feet together, but a little forward, as if they were about to lie down. In this attitude, having taken a survey of the road, they slide down with the swiftness of a meteor. All that the rider has to do is to keep himself fast on the saddle, without checking the rein; for the least motion is sufficient to disorder the equilibrium of the Ass, in which case both must unavoidably perish. But their address in this rapid descent is truly wonderful; for, in their swiftest motion, when they seem to have lost all government of themselves, they follow exactly the different windings of the road, as if they had previously settled in their minds the route they were to follow, and had taken every possible precaution for their safety. In this journey the natives, who are placed along the sides of the mountains, and hold themselves by the roots of the trees, animate the beasts with shouts, and encourage them to perseverance. Some Asses, after being long used to these journeys, acquire a kind of reputation for their safety and skill; and their value rises in proportion to their fame.

In Spain the breed of Asses has, by care and attention, become the finest in the world; they are large, strong, elegant, and stately animals, they are often found to rise to fifteen hands high. The best of them are sometimes sold for a hundred guineas or upwards each. This shows that the Ass, notwithstanding all our prejudices, and our generally contemptuous opinion of it, may be rendered even an elegant, as well as a useful animal. The Romans had a breed which they held in such high estimation, that Pliny mentions one of the stallions selling for a price greater than three thousand pounds sterling; and he says that in Caltiberia, a province of Spain, a she Ass had Colts that were bought for nearly the same sum.

Being more hardy than Horses, these animals are preferred to them for journeys across the deserts. Most of the Musselman pilgrims use them in the long and laborious journeys to Mecca; and the chiefs of the Nubian caravans, which are sixty days in passing immense solitudes, ride upon Asses; and these, on their arrival in Egypt, do not appear fatigued. When the rider alights, he has no occasion to fasten his Ass; he merely pulls the rein of the bridle tight, and passes it over a ring on the fore-part of the saddle; this confines the animal's head, and is sufficient to make him remain patiently in his place.

In the principal streets of Cairo, Asses stand ready bridled and saddled for hire, and answer the same purposes as hackney-coaches in London. The person who lets them accompanies his Ass, running behind to goad him on, and to cry out to those on foot to make way. The animals are regularly rubbed down and washed, which renders their coat smooth, soft, and glossy. Their food is similar to that of the Horses, and usually consists of chopped straw, barley, and beans. They here seem, says M. Denon, to enjoy the plentitude of their existence: they are healthy, active, cheerful, and the mildest and safest animals that a person can possibly have. Their natural pace is a canter or gallop; and, without fatiguing his rider, the Ass will carry him

rapidly over the large plains which lie between different parts of this straggling city.

The gentleness, patience, and perseverance of this animal, so much abused and neglected in England, are without example. He is subjected to excessive labor, and contented with the coarsest herbage. The common lanes and high roads are his nightly residence, and his food is the thistle or plantain, which he sometimes prefers to grass. In his drinking he is, however, singularly nice, refusing all but the water of the clearest brooks. He is much afraid of wetting his feet, and will, even when loaded, turn aside to avoid the dirty parts of the road. His countenance is mild and modest, fully expressive of his simple and unaffected deportment. His services are too often repaid by hard fare and cruel usage; and, being generally the property of the poor, he partakes of their wants and their distresses. He is more healthy than the horse; and though generally degraded into the most useless and neglected of domestic quadrupeds, he might, by care and education, be rendered useful for a variety of domestic purposes in which the horse is now employed. Were they but to pay a little attention to him, we could not fail to be gainers by it. They ought also to cross the breed with the Arabian, Egyptian, or even the Spanish males; which would produce an offspring improved both in strength and appearance. The fame of Asses being stubborn animals is, in a great measure, unfounded; as it arises solely from ill-usage, and not from any natural defect in their constitution or temper.

ASS AND FOAL.

An old man, who some years ago sold vegetables in London, used in his employment an Ass, which conveyed his baskets from door to door. Frequently he gave the poor industrious creature a handful of hay, or some pieces of bread, or greens, by way of refreshment and reward. The old man had no need of any goad for the animal, and seldom indeed had he to lift up his hand to drive it on. This kind treatment was one day remarked to him, and he was asked whether his beast was apt to be stubborn. "Ah master, (he replied) it is of no use to be cruel; and as for stubbornness, I cannot complain, for he is ready to do any thing, or to go any where. I bred him myself. He is sometimes skittish and playful, and once ran away from me: you will hardly believe it, but there were more than fifty people after him;

MULES EMPLOYED TO DRAG RAILROAD CARS.

attempting in vain to stop him; yet he turned back of himself, and never stopped till he ran his head kindly into my bosom."

There are said to have been no Asses in England in the reign of Queen Elizabeth. How soon afterwards they were introduced is uncertain; they are, however, at present naturalized in the country, and their utility becomes every day more apparent.

The skin of the Ass is elastic, and of use for various articles, such as drums, shoes, and the leaves of pocket-books. *Shagreen* is made of that part of the skin which grows about the rump; and at Astracan and throughout Persia there are great manufactories of it. It is not naturally granulated, that roughness being altogether effected by art. The flesh of the wild Ass is eaten by the Tartars, and is said to be a very delicate and palatable food. The milk is universally known, and is an approved specific in many disorders. It is light, easy of digestion and highly nutritious.

The Mule is a mongrel breed between the Horse and the Ass. It is extremely hardy and useful, though often vicious and obstinate.

THE ZEBRA.

The Zebra, somewhat like the Mule, has a large head and ears. Its body is round and plump, and its legs are delicately small. The skin is as smooth as satin, and adorned with elegant stripes like ribbons, which in the male are brown on a yellowish white ground, and in the female black on a white ground.

THE ZEBRA.

Zebras inhabit the scorching plains of Africa, vast herds of them affording sometimes an agreeable relief to the eye of the wearied traveller. They assemble in the daytime on the extensive plains of the interior of the country, and by their beauty and liveliness, adorn and animate the dreary scene.

All attempts to tame this animal, so as to render it serviceable to mankind, have hitherto been fruitless. Wild and independent by nature, it seems ill adapted to servitude and restraint. If, however, it were taken young, and much care was bestowed upon its education, it might, probably, be in a great measure domesticated.

Several Zebras have at different times been brought into England. In the year 1814 there was one in the Tower, which was deposited there in the month of June, 1803. It had been brought from the Cape of Good Hope by lieutenant-general Dundas; and was afterwards purchased by Mr. Bullock the master-keeper of the animals in the Tower. This animal, which was a female, was more docile than the generality of Zebras that have been brought into Europe; and when in good humor, she was tolerably obedient to the commands of her keeper, the servant of the general, who attended her during the voyage. This man would spring on her back, and she would carry him a hundred and fifty, or two hundred yards; but by the time she had done this, she always became restive, and he was obliged to dismount. Sometimes, when irritated, she plunged at the keeper, and attempted to kick him. She one day seized him by the coat with her mouth, and threw him upon the ground; and, had not the man been extremely active in rising and getting out of her reach, would certainly have destroyed him. He at times had the utmost difficulty to manage her, from the irritability of her disposition; the great extent, in almost every

direction, to which she could kick with her feet; and the propensity she had of seizing whatever offended her, in her mouth. Strangers

ZEBRA OF THE PLAINS.

she would by no means allow to approach her, unless the keeper had hold of her head; and even then there was great risk of a blow from her hind feet.

The beautiful male Zebra that was burnt some years ago at the Lyceum, near Exeter 'Change, was so gentle, that the keeper has often put young children upon its back, and without any attempt from the animal to injure them. In one instance a person rode it from the Lyceum to Pimlico. But this unusual docility in an animal naturally vicious, is to be accounted for from its having been bred and reared in Portugal, from parents that were themselves half reclaimed. A Zebra that was kept at Kew, was of a ferocious and savage nature. No one dared to approach it, except the person who was accustomed to feed it, and who alone could mount upon its back. Mr. Edwards saw this animal eat a large paper of tobacco, paper and all; and was told it would eat flesh, and any kind of food that was given to it. This, however, might proceed from habit or necessity in its long voyage; for in a native state these animals all feed, like Horses and Asses on vegetables.

The voice of the Zebra can scarcely be described. It is thought by some persons to have a distant resemblance to the sound of a post-horn. It is more frequently exerted when the animals are alone, than at other times.

In some parts about the Cape of Good Hope there are many Zebras; and a penalty of fifty rix-dollars is inflicted on any person who shoots one of them. Whenever any of these animals happen to be caught alive, there is a general order that they must be sent to the governor.

THE QUAGGA.

THE QUAGGA.

The Quagga is also a native of South Africa. It bears some resemblance to the Zebra, but is at once distinguished from that animal by the paucity and dulness of the stripes, which do not reach to the hind quarters or legs at all, and only faintly mark the back, its head and neck bearing the deepest stripes. It is not formed quite so gracefully as the Zebra,—its hind quarters being slightly higher than its shoulders. The natives occasionally tame it for the purposes of draught, but it is not to be depended on, being vicious and very wild.

THE QUAGGA.

OF THE HIPPOPOTAMUS TRIBE.

ONLY one species of Hippopotamus has hitherto been discovered. This has four front teeth in each jaw; the upper ones stand distant by pairs, the lower ones are prominent, and the two middle ones the longest. The canine teeth are solitary; those of the lower jaw extremely large, curved, and cut obliquely at the ends. The feet are each armed at the margin with four hoofs.

THE AMPHIBIOUS HIPPOPOTAMUS

In size the full-grown Hippopotamus is equal, or even sometimes superior, to the Rhinoceros. One that M. Le Vaillant killed in the south of Africa measured ten feet seven inches in length, and about nine in circumference. Its form is uncouth, the body being extremely large, fat, and round; the legs are very short and thick; the head is large, the mouth extremely wide; and the teeth of vast strength and size.

THE HIPPOPOTAMUS.

The eyes and ears are small. The tail is

short, and sparingly scattered with hair. The whole animal is covered with short hair, thinly set, and is of a brownish color. The hide is in some parts two inches thick, and not much unlike that of the hog.

From the unwieldiness of his body, and the shortness of his legs, the Hippopotamus, according to the account given by M. de Buffon, is not able to move fast upon land, and is then an extremely timid animal. If pursued he takes to the water, plunges in, sinks to the bottom, and there walks at ease. He cannot, however, continue long without rising to the air for the purpose of breathing; though, if threatened with danger, he does this so cautiously, that the place where his nose is raised above the surface of the water is scarcely perceptible.

If wounded, the Hippopotamus will rise and attack boats or canoes with great fury, and he will often sink them by biting large pieces out of their sides. In shallow rivers, he makes deep holes in the bottom, in order to conceal his great bulk. When he quits the water, he usually puts out half his body at once, and smells and looks round; but he sometimes rushes out with great impetuosity, and tramples down every thing in his way. During the night he leaves the rivers, in order to feed on sugar-canes, rushes, millet, or rice, of which he consumes great quantities.

HIPPOPOTAMUS UPSETTING A BOAT.

The Egyptians are said to adopt a singular mode of destroying this voracious animal. They mark the places that he chiefly frequents, and there deposit a quantity of peas. When the beast comes ashore, hungry and voracious, he eagerly devours the peas, which occasion an insupportable thirst. He then rushes into the water, and drinks so copiously, that the peas in his stomach being fully saturated, swell so much as soon afterwards to kill him. Among the Caffres in the South of Africa, the Hippopotamus is sometimes caught by means of pits, made in the paths that lead to his haunts. But the gait of this animal, when undisturbed, is generally so slow and cautious, that he often smells out the snare, and avoids it. The most certain method is to watch him at night, behind a bush close to his path: and, as he passes, to wound him in the tendons of the knee-joint, by which he is immediately rendered lame, and unable to escape from the numerous hunters that afterwards assail him.

These creatures are capable of being tamed. Belon says, he has

seen one so gentle, as to be let loose out of a stable, and led by its keeper, without attempting to injure any person.

"The Hippopotamus is not (says Dr. Sparrman) so slow and heavy in his pace on land, as M. de Buffon describes him to be; for both the Hottentots and colonists consider it dangerous to meet a Hippopotamus out of the water; indeed, an instance had recently occurred, of one of these animals having for several hours pursued a Hottentot, who found it difficult to make his escape."

Prefessor Thunburg was informed, by a respectable person at the Cape, that as he and a party were on a hunting expedition, they observed a female Hippopotamus come out from one of the rivers, and retire to a little distance from its bank, in order to calve. They lay concealed in the bushes till the calf and its mother made their appearance, when one of them fired, and shot the latter dead. The Hottentots, who imagined that after this they could seize the calf alive, immediately ran from their hiding-place; but though it had only just been brought into the world, the young animal got out of their hands, and made the best of its way to the river, where, plunging in, it got safely off. This is a singular instance of pure instinct, for, the Professor observes, the creature unhesitatingly ran to the river, as its proper place of security, without having previously received any instructions from the actions of its parent to do so.

The flesh of the Hippopotamus is in great request among the Hottentots, who are very fond of it, either roasted or boiled. Their partiality might not, however, induce a European to suppose it excellent, for they considerably exceed our epicures in their relish for high-flavored game. Thunburg passed a Hottentot tent, which had been pitched for the purpose of consuming the body of an Hippopotamus, that had been killed some time before: the inhabitants were in the midst of such stench, that the travellers could hardly pass them without being suffocated.

The skin of the Hippopotamus is cut into thongs for whips, which, for softness and pliability, are preferred by the Africans to those of the hide of the rhinoceros; and the tusks, from their always preserving their original whiteness and purity, are reckoned superior to ivory. The French dentists manufacture them into artificial teeth..

HIPPOPOTAMUS.

These animals inhabit the rivers of Africa, from the Niger to Berg river, many miles north of the Cape of Good Hope. They formerly abounded in the rivers nearer the Cape, but they are now almost extirpated there. Mr. Cumming relates a curious adventure, in which he assailed the Hippopotamus in the water, armed only with a knife.

OF THE TAPIR TRIBE

Of this, as of the preceding tribe, there is only one known species; and as the former is a native only of the Old, this is an inhabitant, exclusively, of the New Continent. There are front-teeth in each jaw; and single incurvated canine teeth. There are also five broad grinders on each side, both above and below. On the hind feet there are three hoofs, and on the fore feet four.

THE LONG-NOSED TAPIR.

The Tapir is about the size of a small Cow. The nose of the male is elongated into a kind of proboscis, capable of being contracted and extended at pleasure. The ears are roundish and erect; and the tail is short and naked. The neck is thick, short, and has a kind of bristly mane, about an inch and a half long near the head. The body is thick and clumsy, and the back somewhat arched. The legs are short and thick; and the feet have small black hoofs. The hair is of a dusky or brownish color.

THE TAPIR.

In its general habits this animal has a considerable resemblance to the Hippopotamus; yet, in many particulars, it reminds us also of the Elephant and of the Rhinoceros. It is the largest of all the South American quadrupeds, except the Horse; and its skin is so thick and hard, as to be almost impenetrable by a bullet. Although its natural disposition is marked only by actions indicative of mildness and timidity, endeavoring when attacked, to save itself by flight, or by plunging into the water, yet, if its retreat be cut off, it has courage and strength to make a most powerful resistance, both against men and dogs.

The Tapir feeds chiefly by night, and subsists upon sugar-canes, grasses, the leaves of shrubs, and various kinds of fruit. In feeding it uses its long projecting nose or proboscis, in the same manner as the Rhinoceros applies his upper lip, to grasp its food and convey it to its mouth. This is an instrument of great flexibility and strength; and in it, as in the proboscis of the Elephant, are situated the organs of smell.

Notwithstanding its general clumsy appearance, the Tapir is an extremely active animal in the water, where it swims and dives with singular facility. Like the Hippopotamus, it is able to continue immersed for a considerable while; but it is also under the necessity of occasionally rising to the surface in order to breathe. During the day-time this animal generally sleeps in some retired part of the

woods. It chiefly resides in dry places, near the sides of hills; and occasionally frequents the savannahs in quest of food. On land its motions appear to be slow, and its disposition inactive. Its voice is a kind of whistle, which the hunters easily imitate, and by this means frequently lure it to its destruction. The usual attitude which the Tapir adopts, when at rest, is sitting on its rump in the manner of a Dog.

Except at one season of the year, the male lives entirely apart from

HUNTING THE TAPIR.

the female. To the latter belongs the whole management of rearing their offspring. This she leads to the water, and she seems to delight in teaching it to swim, frequently plunging about and playing with it, in that element, for a considerable while together. On land it runs after her wherever she goes.

If they are caught young, these animals may, without difficulty, be tamed, and rendered even in some measure domestic. They are very common in the town of Cayenne, where they are suffered to run about the streets, and are fed with cassava-bread and fruit. M. Bajou, a surgeon attached to the government, had, at this place, a Tapir which became perfectly familiar, and acquired a strong attachment to him, distinguishing him in the midst of many other persons, licking his hands, and following him like a Dog. This animal would often go alone into the woods to a great distance, but always returned to his home early in the evening. M. Bajou assures us, that a Tapir, which had been suffered to run tame about the streets of Cayenne, became so unmanageable in a vessel, on board of which it was put in order to be conveyed to France, that it was found impossible to confine it. It broke the very strong cords with which it was tied, and, throwing itself overboard, escaped to shore. Every one supposed it to have been lost, but, in the evening, it returned to the town. On reimbarking it, great precautions were taken to prevent its escape; but these

did not succeed, for during the voyage, a storm happening to rise, it became again outrageous, broke its fetters, and, rushing out of its place of confinement, committed itself to the waves, and was never afterwards seen.

In the year 1704, a Tapir was exhibited alive at Amsterdam, under the name of *Sea Horse*. Another, which, about the same time, was in the menagerie of the Prince of Orange, was so young as scarcely to be larger than a Hog. Its proboscis, when at rest, did not much extend below the under lip; and, in this state, had numerous circular wrinkles, but was capable of considerable extension. It had no finger at the extremity, like the proboscis of an Elephant, notwithstanding which, the animal, by means of it, could pick up from the ground the smallest objects. This creature was very gentle, and approached with familiarity any one who entered its lodge. A female Tapir was exhibited at several of the fairs in Holland and Germany. The keepers usually fed it on rye-bread, a kind of gruel, and on vegetables of different kinds. It was excessively fond of apples, and was able to smell them to a considerable distance. If any person happened to have apples in his pockets, it would eagerly approach, and thrusting in its proboscis, would take them out with surprising facility. It ate of almost every thing that could be presented to it, whether vegetables, fish, or meat. Its favorite attitude was sitting on its rump, like a Dog; and it never exerted its voice unless it was either fatigued or irritated.

In the year 1812, there was, at Exeter 'Change, a young Tapir, which was not bigger than a large Hog. It had been brought into England about seven months before, with another of the same species, which died not long after its arrival. In every respect it appeared to be a mild and docile beast.

These animals inhabit the eastern parts of South America; and occur in great numbers, from the Isthmus of Darien, to the river Amazon. Their flesh is considered by the South Americans as a wholesome food; and the skin serves all the purposes for which a strong leather would be required. The Indians make shields of it, which are stated to be so hard, as to be impenetrable by an arrow.

The Malay Tapir is somewhat larger, and is known by the greyish white color of the loins and hind quarters, which give the animal an appearance as if a white horse-cloth had been spread over it.

THE HYRAN, OR DAMAN.

The Hyran, or Daman, although so small an animal, is ranked among the Tapirs. It abounds on the sides of Table Mountain, where it may be seen skipping near its burrow's mouth, or cropping the herbage; on the least alarm, however, it instantly retreats to its stronghold, whence it cannot be dislodged without the greatest difficulty. In the general contour of its body, the Hyran is stout and thickly set. The limbs are short, the toes on each foot are four before and

three behind, all being tipped with little slender hoofs, except the inner toe on each hind foot, which is armed with a long, crooked nail. The head is large and thick, the eyes of a moderate size, the ears short and rounded; the teeth consist of molars, and incisors, the former bearing a close resemblance to those of the Rhinoceros. It has no tail. The general color of the fur, which is soft and thick, is a dark greyish brown, becoming paler beneath.

OF THE HOG TRIBE IN GENERAL.

In the upper jaw there are four front teeth, the points of which converge; and, usually, six in the lower jaw, which project. The canine teeth, or tusks, are two in each jaw; those above short, while those below are long, and extend out of the mouth. The snout is prominent, moveable, and has the appearance of having been cut off, or truncated. The feet are cloven.

The manners of these animals are, in general, filthy and disgusting. They are fond of wallowing in the mire, and feed almost indifferently on animal and vegetable food, devouring even the most corrupted carcasses. With their strong and tendinous snout they dig the earth, in search of roots and other aliments hidden beneath the surface. They are exceedingly prolific.

THE COMMON HOG.

THE COMMON HOG.

In Europe Wild Boars inhabit the depths of forests, where, in vegetables and fallen fruits, they are supplied with an abundance of food. From these forests they never issue but for the purpose of changing their residence, or of plundering and devastating the adjacent fields. In Egypt, on the contrary, the Wild Boar has no shelter. Continually exposed to the fervor of a burning sun, he traverses the sandy plains where the

few scattered shrubs which are there found, yield him but little subsistence, and still less shade.

WILD BOAR.

While they are young, these animals live in herds, for the purpose of mutual defence; but the moment they come to maturity, they walk the forest alone and fearless. They seldom attack unprovoked; but they dread no enemy, and shun none. When hunted, they do not so much flee from their assailants, as keep them at bay, and are at last rather wearied out, or overcome by numbers, than fairly killed in the chase.

The Domestic Hog is, generally speaking, a harmless and inoffensive beast. He lives chiefly on vegetables, though, when pressed by hunger, he will devour even the most putrid carcasses. We, however, generally conceive him much more indelicate than he really is. He selects, at least, the plants of his choice, with great sagacity and niceness; and is never, like some other animals, poisoned by mistaking noxious for wholesome food. Selfish, indocile, and rapacious, as many think him, no animal has greater sympathy for those of his own kind than the Hog. The moment one of these animals gives the signal of distress, all within hearing rush to its assistance. They have been known to gather round a Dog that teased them, and kill him on the spot. Enclose a male and female in a sty, when young, and the female will decline from the instant her companion is removed, and will probably die of a broken heart. This animal is well adapted to the mode of life to which it is destined. Having to obtain a subsistence principally by turning up the earth with its nose, we find that the neck is strong and brawny; the eyes are small, and placed high in the head; the snout is long; the nose callous and tough, and the power of smelling peculiarly acute. The external form is indeed very unwieldy, but, by the strength of its tendons, the Wild Boar is enabled to fly from the hunters with surprising agility. The back toe on the feet of this animal prevents its slipping while it descends steep declivities.

In Minorca the Hog is converted into a beast of draught; a Cow, a Sow, and two young Horses, have been seen in that island yoked together, and of the four the Sow drew the best. The Ass and the Hog are their common helpmates, and are frequently yoked together to plough the land. In some parts of Italy, Swine are employed in hunting for truffles, which grow some inches deep in the ground. A cord being tied round the hind leg of one of the animals, the beast is driven into the pastures, and we are told that wherever he stops and begins to root with his nose, truffles are always to be found.

In proof that these animals are not destitute of sagacity, it would perhaps be unnecessary to recite any other accounts than those of the various "*learned Pigs*," which have at different times been exhibited in this country. But an instance more surprising than these was

afforded by Toomer, the gamekeeper of the late Sir H. P. St. John Mildmay, actually breaking in a black New Forest Sow to find game, back and stand, nearly as well as a pointer. This Sow, when very young, took a great partiality to some pointer puppies that Toomer, then under-keeper of Broomy Lodge, in the New Forest, was breaking. It played and often came to feed with them. From this circumstance it occured to Toomer, to use his own expression, "that, having broken many a Dog as obstinate as a Pig, he would try if he could also succeed in breaking a Pig." The little animal would often go out with the puppies to some distance from home; and Toomer would entice it further by a sort of pudding made of barley-meal, which he carried in one of his pockets. The other he filled with stones, which he threw at the Pig whenever she misbehaved, as he was not able to catch and correct her, in the same manner as he did his Dogs. He informed Sir Henry Mildmay, who communicated to me this account, that he found the animal very tractable, and that he soon taught her what he wished, by this mode of reward and punishment. Sir Henry Mildmay, informed me that he had frequently seen her out with Toomer, when she quartered her ground, stood when she came on game, having an excellent nose, and backed other Dogs as well as he ever saw a pointer. When she came on the cold scent of game, she slackened her trot, and gradually dropped her ears and tail, till she was certain, and she then fell down on her knees. So staunch was this animal that she would frequently remain five minutes and upwards on her point. As soon as the game rose, she always returned to Toomer, grunting very loudly for her reward of pudding, if it was not immediately given to her. When Toomer died, his widow sent the Pig to Sir Henry Mildmay, who kept it for three years, but never used it except for the purpose of amusing his friends. In doing this, a fowl was put into a cabbage net, and hidden among the fern in some part of the park, and the extraordinary animal never failed to point it, in the manner above described. Sir Henry was at length, obliged to part with this Sow, from a circumstance as singular as the other occurrences of her life. A great number of Lambs had been lost, nearly as soon as they were dropped, and a person having been sent to watch the flock, the animal was detected in the very act of devouring a Lamb. This carnivorous propensity was ascribed to her having been accustomed to feed with the Dogs, and to partake of the flesh on which they were fed. Sir Henry sent her back to Mrs. Toomer, who sold her to Mr. Sykes, of Brookwood in the New Forest, where she died the usual death of a Pig, and was converted into bacon.

DOMESTIC HOG.

The senses of taste and smelling are enjoyed by these animals in great perfection. Wind appears to have great influence on them; for when it blows violently they seem much agitated, and run towards their sty, sometimes screaming in the most violent manner. Natur-

WILD BOAR.

alists have also remarked that, on the approach of bad weather, they will bring straw to the sty, as if to guard against the effects of wind. The country people have a singular adage, that "Pigs can see wind."

That Swine are extremely tenacious of life is known to almost every person who is acquainted with their manners. The most curious instance that I have met with of this, in any writer, is in Josselyn's account of two voyages to New England. I shall insert the passage, though I by no means intend to vouch for its truth. "Being at a friend's house in Cambridgeshire, the cook-maid making ready to slaughter a Pig, she put the hinder parts between her legs, as the usual manner is, and taking the snout in her left hand, with a long knife stuck the Pig, and cut the small end of the heart almost in two, letting it bleed as long as any blood came forth; then throwing it into a kettle of boiling water, the Pig swam twice round about the kettle; when taking it out to the dresser, she rubbed it with powdered rosin, and stripped off the hair, and as she was cutting off the hinder petty-toe, the Pig lifted up his head with open mouth, as if it would have bitten. Well, the belly was cut up, the entrails drawn out, and the heart laid upon the board, which, notwithstanding the wound it received, had motion in it above four hours after. There were several of the family by, with myself, and we could not otherwise conclude but that the Pig was bewitched."

The females go four months with young, and have very numerous litters, sometimes as many as twenty at a time. These animals live to a considerable age, even to twenty-five or thirty years.

In the island of Sumatra there is a variety of this species, that frequents the impenetrable bushes and marshes of the sea-coast. These animals live on Crabs and roots: they associate in herds, are of a gray color, and smaller than the English Swine. At certain periods of the year they swim in herds, consisting of sometimes a thousand, from one side of the river Siak to the other, at its mouth, which is three or four miles broad, and again return at stated times. This kind of passage also takes place in the small islands, by their swimming from one to the other. On these occasions they are hunted by a tribe of the Malays, who live on the coasts of the kingdom of Siack, and are called Salettians.

These men are said to smell the Swine long before they see them, and when they do this they immediately prepare their boats. They then send out their Dogs, which are trained for this kind of hunting, along the strand, where, by their barking, they prevent the Swine from coming ashore and concealing themselves among the bushes. During the passage the Boars precede, and are followed by the females and the young, all in regular rows, each resting its snout on the rump of the preceding one. Swimming thus in close rows, they form a singular appearance.

The Salettians, men and women meet them in their small, flat

boats. The former row, and throw large mats, made of the long leaves of the *Pandamus odoratissima*, interwoven through each other, before the leader of each row of swine, which still continue to swim with great strength, but, soon pushing their feet into the mats, they get so entangled as to be able either no longer to move, or only to move very slowly. The rest are, however, neither alarmed nor disconcerted, but keep close to each other; none of them leaving the position in which they were placed. The men then row towards them in a lateral direction; and the women, armed with long javelins, stab as many of the Swine as they can reach. For those beyond their reach, they are furnished with smaller spears, about six feet in length, which they dart to the distance of thirty or forty feet with a sure aim. As it is impossible for them to throw mats before all the rows, the rest of these animals swim off in regular order, to the places for which they set out, and for this time escape the danger. As the dead Swine are found floating round in great numbers, they are picked up and put into larger boats, which follow for the purpose.

Some of these swine the Salettians sell to the Chinese traders who visit the island; and of the rest they preserve in general only the skins and fat. The latter after being melted, they sell to the Maki Chinese; and it is used by the common people instead of butter, as long as it is not rancid, and also for burning in lamps, instead of cocoa-nut oil.

THE ETHIOPIAN HOG.

This animal, in its general appearance, is much allied to the Common Hog; but is distinguished from it by a pair of large semicircular lobes or wattles, situated beneath the eyes. The snout also is much broader, and very strong and callous.

These creatures inhabit the wildest, most uncultivated, and hottest parts of Africa, from Senegal to Conga; and they are also found on the island of Madagascar. The natives carefully avoid their retreats, since, from their fierce and savage nature, they often rush upon them unawares, and gore them with their tusks.

They reside principally in subterraneous recesses, which they dig by means of their nose and hoofs. If attacked and pursued, they rush on their adversary with astonishing force, striking like the common boar, with their tusks, which are capable of inflicting the most tremendous wounds.

A Boar of this species was sent, 1765, by the governor of the Cape of Good Hope to the Prince of Orange. From confinement and attention he became mild and gentle, except when offended; in which case even those persons to whose care he was entrusted, were afraid of him. In general, however, when the door of his cage was opened, he came out in perfect good-humor, gaily frisked about in search of food, and greedily devoured whatever was given him. He was one day left alone in the court-yard for a few minutes, and on the return of the keeper, was found busily digging into the earth, where, notwith-

standing the cemented bricks of the pavement, he had made an amazingly large hole, with a view, as was afterwards discovered, of reaching a common sewer that passed at a considerable depth below. It was not without much trouble, and the assistance of several men, that his labor could be interrupted. They at length, however, forced him into his cage; but he expressed great resentment, and uttered a sharp and mournful noise.

His motions were altogether much more agile and neat than those of the common Hog. He would allow himself to be stroked, and even seemed delighted with rough friction. When provoked, or rudely pushed, he always retired backward, keeping his face towards the assailant, and shaking his head or forcibly striking with it. When, after long confinement, he was set at liberty for a little while, he was very gay, and leaped about in an entertaining manner. On these occasions, he would, with his tail erect, sometimes pursue the fallow-deer and other animals.

His food was principally grain and roots; and of the former he preferred barley and wheat. He was so fond of rye-bread, that he would run after any person who had a piece of it in his hand. In the acts of eating and drinking he always supported himself on the knees of his fore feet; and would often rest in this position. His eyes were so situated as to prevent his seeing around him, being interrupted by the wattles and prominences of his face; but, in compensation for this defect, his senses of smelling and hearing were wonderfully acute.

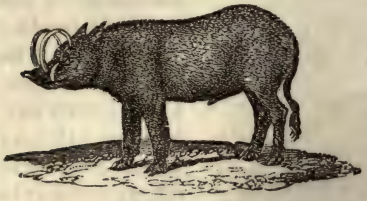
Dr. Sparrman, when he was in Africa, pursued several Pigs with the old Sows, with the intention of shooting one of them; but though he failed in this object, their chase afforded him singular pleasure. The heads of the females, which had before appeared of a tolerable size, seemed on a sudden to have grown larger and more shapeless than they were. This momentary and wonderful change astonished him so much the more, as, riding hard over a country full of bushes and pits, he had been prevented from giving sufficient attention to the manner in which it was brought about. The whole of the mystery however, consisted in this: each of the old ones, during its flight, had taken a Pig in its mouth; a circumstance that also explained to him another subject of his surprise, which was, that all the Pigs which he had just before been chasing along with the old ones, had vanished on a sudden. But in this action we find a kind of unanimity among these animals, in which they resemble the tame species, and which they have in a greater degree than many others. It is likewise very astonishing that the Pigs should be carried about in this manner between such large tusks as those of their mother, without being hurt, or crying out in the least. Dr. Sparrman was twice afterwards witness to a similar occurrence

The flesh of the Ethiopian Hog is well flavored and not unlike that of the German Wild Boar.

THE BABYROUSSA.

The Babyroussa inhabits the Molucca Islands and Java. It is remarkable for possessing four tusks, two of which proceed from the upper jaw, and do not pass out between the lips, but through an aperture in the skin, half way between the end of the snout and eyes. The sockets of the two upper tusks are curved upwards, and give a singular appearance to the skull of the animal. It looks

THE BABYROUSSA.



THE BABYROUSSA.

a ferocious animal, nor do its looks contradict its habits, as it is very savage, and cannot be hunted without danger. Yet when taken young it can be tamed without much difficulty, and conducts itself much after the manner of a well-behaved Pig.

Only the male possesses the remarkable double pair of tusks, the female being destitute of the upper pair, and only possessing those belonging to the under jaw in a rudimentary degree. It lives in troops, as do most of the Hog kind, and thus does much damage to the cultivated grounds, especially to the maize, a plant to which it is, unfortunately, very partial. It is a good swimmer, and often voluntarily takes to the water in order to cross to another island. The size of the animal when full grown, is about that of a very large Hog.

THE COMMON, OR COLLARED PECCARY.

The Common, or Collared Peccary, is an inhabitant of South America. This animal is both dreaded and hated by the residents, for it is so exceedingly ferocious, and so utterly devoid of all sense of fear, that it will always charge at any object that comes in its way; an Elephant would not scare it, if an Elephant were to be transported to South America. So it puts to flight those whom it attacks, and they fly before it in

mixed fear and wrath against the pugnacious little animals which are pursuing them. It is a small animal, rarely exceeding eighteen inches in height, and yet is not less dreaded than the most savage wild Boar would be. Its jaws are armed with tusks, like those of the Boar, but they are straight instead of curved, are sharp at the edges, and although only about an inch and a half in length, inflict horrible wounds, on account of the muscular strength of the creature's neck. When a body of them charge against an enemy, fancied or real, they will never be driven away, but will fight till the last is slain. On this account, no one will willingly oppose them; and if a herd of Peccaries comes in the way, men, Horses, and Dogs, all fly in haste, as even the Horses would be soon brought down, for their legs would be cut to pieces. The best method of attacking them is that described by Webber in the following passage:—

"But with all its other peculiarities to answer for, the drollest is yet to come. I refer to their mode of sleeping. They usually frequent those heavy canebrakes, through which are scattered, at wide intervals, trees of enormous size and age. These, from their isolated condition, are most exposed to the fury of storms, and therefore most liable to be thrown down. We find their giant stems stretched here and there through the canebrakes of Texas, overgrown with the densest thickets of the cane, matted together by strong and thorny vines. In these old trees the Peccaries find their favorite lodgings. Into one of these logs a drove of twenty or thirty of them will enter at night, each one backing in, so that the last one entering stands with his nose at the entrance. The planters, who dread them and hate them, as well on account of the ravages on their grain crops which they commit, the frequent destruction or mutilation by them of their stock—their favorite Dogs, and sometimes even their Horses, as on account of their ridiculous predicaments, such as taking to a tree, or running for their life, to which they have been subjected themselves, seek their destruction with the greatest eagerness.

THE PECCARY.

"When a hollow log has been found which bears the marks of being used by them, the hunters wait with great impatience till the first dark, cloudy day of rain; a dark drizzle is the best, as it is well known that on such days they do not leave their lodgings at all. The planter, concealing himself just before day carefully out of view, but

directly in front of the opening of the log, awaits in patient silence the coming of sufficient light. Soon as the day opens, peering cautiously through the cane, he can preceive the protruded snout, and sharp, watchful eyes, of the sentinel-Peccary on duty, while his fellows behind him sleep. Noiselessly the unerring rifle is raised, the ring of its explosion is heard, and, with a convulsive spring, the sentinel leaps forward out of the hole, and rolls in its death-struggle, on the ground. Scarcely an instant is passed, a low grunt is heard,

PECCARIES SLEEPING.

and another pair of eyes is seen shining steadily in the place the others had just held. Not a sound is heard, the planter loads again with such dexterity that not even a branch of the embowering cane is stirred. Again with steady nerve the piece is fired, out springs the second victim as the first had done; then another takes its place, and so on to the third, fourth, fifth, and twentieth, even to the last of the herd, unless the planter should happen by some carelessness to make a stir in the cane around him, when out it springs with a short grunt, without waiting to be shot this time, and followed by the whole herd, when they make a dash at the unlucky sportsman, who is now glad enough to take to his heels, and blesses his stars if he should be able to climb a tree or a fence in time to save his legs. If during the firing, the sentinel should happen to sink in the hole without making the usual spring, the one behind him roots out the body to take its place. They do not understand what the danger is, or whence it comes. Neither do they fear it, but face its mysterious power to the last. They never charge towards unseen enemies, until guided either by the sight of some disturbance caused by a motion in the thicket, or by those sounds with which they are familiar, indicating their position. Incredible as this account may appear, it is actually the method in which the settlements along Caney Creek and in the Brazos Bottoms have been of late years in a great measure relieved of this dangerous annoyance."

The Peccary alone of all animals appears to have resisted the terrors of the gun, and a herd of them will attack men with fire-arms, and only seem to be more enraged by the report and flash of the guns. The Indians eat the animal, but its flesh is not considered to be

particularly excellent, especially as the gland which the animal bears in its haunches has an evil effect on the meat, and causes it to become unfit for use in a very short time. Its color is a greyish black, caused by the color of the bristles, which are ringed at intervals with grey, straw-color, and black.

The glandular pouch on the back gives out a strong smell of garlic; but the use of the pouch or the secretion in the economy of the animal, is wholly unknown. This odor is given out in the greatest abundance when the animal is irritated, as then it erects the bristles on the neck and along the line of the back, by which means the gland is more compressed than when the animal is in a tranquil state. When alarmed, it utters a sharp and piercing kind of squeak, but not quite so piteous as that which is uttered by a Hog in distress; like Hogs, too, they express their satisfaction by a softened species of grunting. They are inhabitants of the woods in the lower grounds on the east side of South America; but we are not aware that they have been met with to the westward of the Andes, and they never occur in lofty situations. Buffon committed a curious blunder respecting this species of Peccary, The Spanish colonists in Paraguay, from whom he drew the materials of his account of the locality and habits of the animal, use the word *monte* as descriptive of a forest; and Buffon, confounding this with the French *mont*, described this Peccary as a mountain animal, which is the very reverse of its proper habitat. The same eloquent, but fanciful and not very accurate describer, represented the pale-colored collar, which obliquely surrounds the neck of this species, as a dorsal stripe extending along the ridge of the back.

These animals are found in pairs in the breeding season, and at these times they rarely, if ever, come out of the forest. The female produces, as is understood, only once in the year; and the young are generally two, and never more. They are easily tamed, and fond of being caressed, but they are also impatient of restraint, and if detained against their will, they not only erect their dorsal bristles, and utter their war-cry, but attempt to bite, which they do pretty severely. Some that have been kept in menageries in Europe, have shown much docility, as compared with the Hog when in the wild state. They preferred fruits and farinaceous vegetable substances to any other kind of food; but still when that was not given them, they could be very miscellaneous in their feeding. Well-known as these animals ought to be, there have been some mistakes about them; and the manners and numbers of this, which is really the most rare of the two, have sometimes been given to the other, which is a larger and bolder animal, and met with in herds, whereas the collared one seems to be more retiring and seldom met with except in pairs.

CETACEOUS ANIMALS.

THE animals of the Linnean order Cete have spiracles or breathing holes on the fore part of the skull. They have no feet: their pectoral fins are without nails; and the tail is horizontal.

OF THE NARWAL TRIBE.

THE Narwals have one or two very long weapons projecting from the front of their upper jaw. There are no teeth in the lower jaw. The orifices of the spiracles are united, and situated n the highest part of the head.

The Narwals are distinguishable, at first sight, from all other Cetaceous Animals. They are known by the long, hard, spiral, and sharp-pointed weapons which project from the anterior part of their upper jaw. They obtained the name of *Narh-wal,* or Whale which feeds on dead bodies, from their having been believed to subsist on such dead and putrid animals as they found floating on the water.

THE UNICORN NARWAL, OR SEA UNICORN.

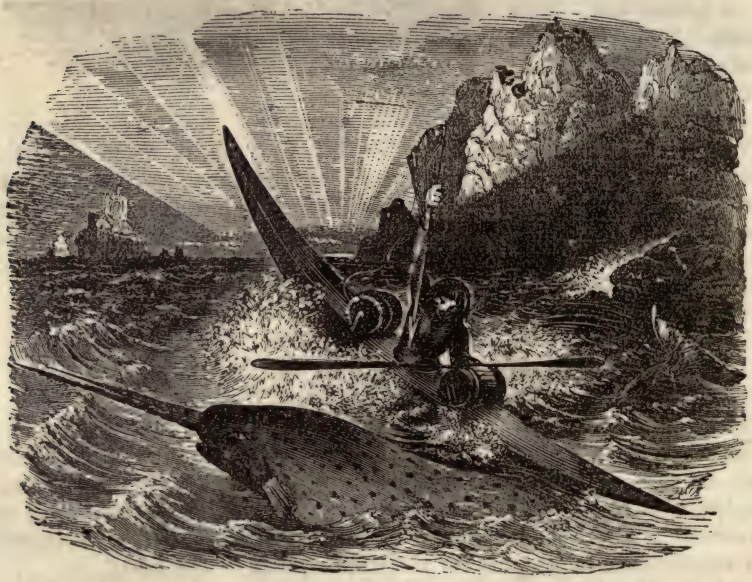
This animal measures from twenty to thirty feet in length, exclusive of the weapon in front of its head, which is from five to eight feet long. In some individuals there are two weapons. The head is small in proportion to the size of the body; and the fins on the breast are also small. There is no dorsal fin. The skin is white, variegated with numerous black spots on the upper parts of the body.

Such are the size and bulk, and so powerful are the muscles of these animals, that they are able, in their own element, to move, in all directions, with astonishing velocity. The weapon which projects, sometimes to the length of six or eight feet, from their upper jaw, is one of the most formidable that can well be imagined. When urged with all their force, it will penetrate even into the solid timbers of a ship; and the body of no animal whatever is sufficiently hard to resist its effects. This weapon is not a horn, but is a species of tusk, in its substance not greatly dissimilar to the tusks of the Elephant. As ivory, it is, however, much more valuable than these, from the

circumstance of its being harder, and capable of receiving a much higher polish.

The detached weapons of Narwals are deposited, in many cabinets, as the horns of that generally esteemed fabulous quadruped, the Unicorn. They have occasionally been found broken short off, and deeply buried in the keels and bottoms of vessels; and even in the bodies of some of the largest species of Whales, which either accident or design may have led the Narwal to plunge against.

These animals do not appear to have any organs of voice. It is stated that, in their general disposition and manners they are sufficently mild and peaceable; and that they are formidable only when compelled to defend themselves from the attack of their enemies. Their principal food consists of small fish, and marine animals of various kinds, such as the Actinæ and Cuttle-fish: the horny mandibles or jaws of the latter have sometimes been found in their stomachs, in immense quantity. They usually swim in troops; and are found in most parts of the Northern Ocean. The Greenlanders pursue and kill them on account of their oil. This they employ in domestic uses:



NARWAL HUNTING

they also use the flesh for food, and the teeth as articles of traffic. The blubber of the Narwal is from two to three inches and a half in thickness, encompasses the whole body, and is sometimes more than half a ton in weight. This affords a large proportion of fine oil.

The females produce each a single young-one at a birth; and this they nourish for several months with milk, supplied from teats that are situated near the origin of their tail.

In the Northern seas, when the Narwal is harpooned, it dives in

the same manner, and with almost the same velocity as the Great Whale, but not to the same depth. It generally descends about two hundred fathoms, then returns to the surface, and is dispatched with a lance in a few minutes.

OF THE WHALE TRIBE.

THE Whales have no teeth in either jaw; but, in place of these, the upper jaw is furnished with the horny laminæ called *whalebone*. On the top of the head there is a tubular opening or spiracle, with a double external orifice. The skin is in general black, or brown; very thick, and without any hair.

Whales are objects of eager pursuit by the inhabitants of various nations, on account, principally, of the oil or blubber which their bodies yield in enormous quantity; and of the *whalebone*, the laminæ or blades of which supply, in these animals, the place of teeth, in catching and securing their food.

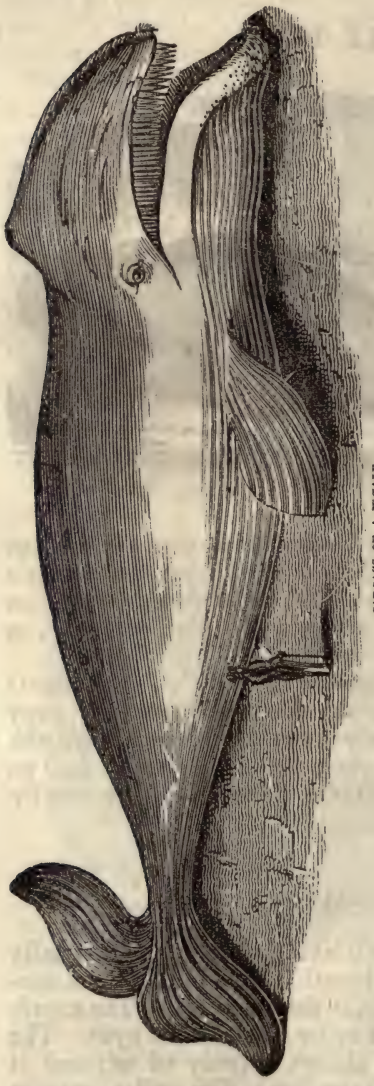
There are about six ascertained species of Whales, inhabitants chiefly of the icy regions surrounding the North Pole. They prey upon various kinds of fish, particularly upon Herrings, among the shoals of which they commit great devastation. They also feed on Shell-fish, and the Medusæ or Sea-blubber. The females generally produce but one young-one at a birth.

THE GREAT WHALE.

This is believed to be the largest of all living creatures. It usually measures from fifty to eighty feet in length. The head, which constitutes nearly a third of the whole bulk, is flattish above. The mouth is exceedingly large, stretching almost as far back as the eyes. The tongue is very soft, being composed almost entirely of fat; and it adheres, by its under surface, to the lower jaw. The gullet scarcely exceeds four inches in width. The eyes, which are not larger than those of an Ox, are placed at a great distance from each other, on the sides of the head, in the most convenient situation possible for the animals' seeing around them. The skin is about an inch thick, and the outer or scarf-skin about the thickness of parchment, and very

smooth. Under the skin lies the blubber, which is from eight to twelve inches thick: this, when the animal is in health, is of a beautiful yellow color. The tail is broad and semilunar.

The size and bulk of these animals are generally enormous; and their muscular powers are so great, that a blow of their horizontal tail, is at any time sufficient to upset a boat; and, when struck upon the surface of the ocean, it makes the water fly, with tremendous noise, in all directions. They are able to eject water from the spiracles on their heads, to a great height.



CARCASS OF A WHALE.

SKELETON OF A WHALE.

This animal employs the tail alone to advance itself in the water; and the force and celerity with which so enormous a body cuts its way through the ocean, are truly astonishing. A track is frequently made in the water like what would be left by a large ship; this is called his wake, and by this the animal is often followed. The fins are only applied in turning, and giving a direction to the velocity impressed by the tail. The usual rate at which Whales swim, seldom, however, exceeds four miles an hour. When alarmed, their extreme velocity

is eight or nine miles an hour, but this seldom continues more than a few minutes at a time. These animals sometimes ascend to the surface with so much velocity as to leap entirely out of the water. Sometimes they throw themselves into a perpendicular posture, with their heads downward; and, rearing their tails on high in the air, they beat the water with awful violence. In both these cases, the sea is thrown into a foam, and the air filled with vapors. Sometimes the Whale shakes its tremendous tail in the air, and makes with it a cracking noise, which is heard at the distance of two or three miles.

When a Whale retires from the surface of the water into the deep, it first lifts its head, then, plunging beneath the waves, elevates its back, like the segment of a sphere, deliberately rounds it away towards the extremity, throws its tail out of the water, and then disappears.

WHALE PLUNGING.

These Whales are shy and timid animals, furnished with no weapons either of offence or defence, except their tail. As soon as they perceive the approach of a boat, they generally plunge under water, and sink into the deep; but when they find themselves in danger they exhibit their great and surprising strength. In this case they break to pieces whatever comes in their way; and if they run foul of a boat, they dash it to atoms.

Whales have no voice; but, in breathing, or blowing through their spiracles, they make a very loud noise. The water which they discharge, is ejected to the height of several yards, and at a distance appears like a puff of smoke. When these animals are undisturbed, they usually remain on the surface of the water about two minutes at a time, during which they breathe eight or nine times, and then descend for an interval of five or ten minutes; or, when feeding, fifteen or twenty. The depth to which they usually descend is not

very great; but when struck with a harpoon, they sometimes draw out from the boats, in a perpendicular descent, as much line as would measure an English mile.

When the Whale feeds, it swims with considerable velocity below the surface of the sea, with its jaws widely extended. A stream of water consequently enters its capacious mouth, and, along with it, immense quantities of cuttle-fish, sea-blubber, shrimps, and other small marine animals. The water escapes at the sides; but the food is entangled, and, as it were sifted by the whalebone within the mouth.

From their naturally inoffensive disposition these animals have many foes; but the enemy they have most reason to dread is the Sword-fish. This animal is sufficiently active to evade the blows which its tremendous adversary makes with his tail, one of which, if it took place, must effectually destroy it. The sea, for a considerable space around, may be seen dyed with the blood, that issues in copious streams, from the wounds made in the Whale's body by the dreadful beak of his adversary. The noise made at each blow of the tail, is said to be louder than that of a cannon. The fishermen, in calm weather, frequently lie on their oars as spectators of the combat, till they perceive the Whale at his last gasp; they then row towards him, and, the enemy retiring at their approach, they enjoy the fruits of his victory.

The fidelity of the male and female to each other, exceeds that of most animals. Some fishermen, as Anderson, in his History of Greenland, informs us, having struck one of two Whales, a male and female, that were in company together, the wounded animal made a long and terrible resistance; with a single blow of its tail it upset a boat containing three men, by which all went to the bottom. The other still attended its companion, and lent it every assistance, till, at last, the animal that was struck sank under the number of its wounds, while its faithful associate, disdaining to survive the loss, stretched itself upon the dead Whale, and shared its fate.

To the Greenlanders, as well as to the natives of southern climates, the Whale is an animal of essential importance; and these people spend much time in fishing for it. When they set out on their Whale-catching expeditions, they dress themselves in their best apparel, fancying, that if they are not cleanly and neatly clad, the Whale, which detests a slovenly and dirty garb, would immediately avoid them. In this manner about fifty persons, men and women, set out together in one of their large boats. The women carry along with them their needles and other implements, to mend their husbands' clothes, in case they should be torn, and to repair the boat, if it happen to receive any damage. When the men discover a Whale, they strike it with their harpoons, to which are fastened lines or straps two or three fathoms long, made of Seal-skin, having at the end a bag of a whole seal-skin, blown up. The huge animal, by means of the inflated bag, is in some degree compelled to keep near the surface of the water. When he is fatigued and rises, the men attack him with their spears till he is killed. They now put on their *spring jackets*, (made, all in one piece, of a dressed Seal's skin.) with their boots,

gloves, and caps, which are laced so tightly to each other, that no water can penetrate them. In this garb they plunge into the sea, and begin to slice off the fat all round the animal's body, even from those parts that are under water; for, their jackets being full of air, the men do not sink, and they have means of keeping themselves upright in the sea. They have sometimes been known so daring as, while the Whale was still alive, to mount on his back and kill him from thence.

The period of gestation in the female is supposed to be nine or ten months, and she generally produces but one at a birth. When she suckles it she throws herself on one side, on the surface of the water, and in this position the young-one attaches itself to the teat. She is extremely careful of her offspring, carrying it with her wherever she goes; and, when hardest pursued supporting it between her fins. Even when wounded she is said still to clasp it; and, if she plunge to avoid danger, she takes it with her to the bottom; but in this case she always rises sooner than she otherwise would, for the purpose of giving it breath. The young-ones continue with the dam for nearly twelve months; during this time they are called by the sailors *Short-heads*. They are then extremely fat, and will yield each above fifty barrels of blubber. At two years old they have the name of *Stunts*, from not thriving much immediately after quitting the breast; at this age they will scarcely yield more than twenty barrels of blubber. From the age of two years they are denominated *Skull-fish*.

The flesh of the Whale is very dry and insipid, except about the tail, which is more juicy, but still very tasteless. The horny laminæ in the upper jaw, called *whalebone*, are very valuable as an article of commerce: but these animals are principally pursued for their oil or blubber.

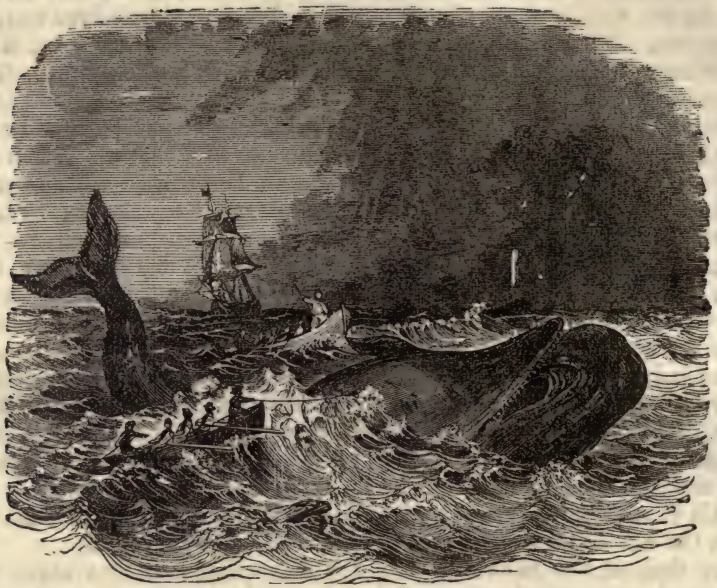
The seas that are principally inhabited by the Great Whales, are those in about the seventieth degree of north latitude, near Spitzbergen and Greenland. These animals are likewise found in the seas of the high southern latitudes, and are said sometimes to visit the shores even of the countries near the torrid zone. They have been observed in the Mediterranean, and occasionally in the neighborhood of the British coasts. Willoughby speaks of one that was stranded near Tinmouth in Northumberland. In the year 1652, a great Whale, eighty feet in length, was cast ashore in the Frith of Forth; and, about thirty years afterwards, another, somewhat more than seventy feet in length, near Peterhead, in Scotland.

THE WHALE-FISHERY.

In a commercial view the animals of the Whale tribe are of great importance to mankind; supplying us with those two valuable articles, oil and whalebone, and likewise with spermaceti. They are chiefly taken in the northern seas.

The English send out with every ship six or seven boats: each of these has one harpooner, one man at the rudder one to manage the

line, and four seamen as rowers. In each boat there are also two or three harpoons; several lances; and six lines, each a hundred and twenty fathoms long, fastened together



As soon as a Whale is struck with the harpoon, he darts down into the deep, carrying off the instrument in his body; and so extremely rapid is his motion, that, if the line were to entangle, it would either snap like a thread, or overset the boat. One man, therefore, is stationed to attend only to the line, that it may go regularly out; and another is employed in continually wetting the place it runs against, that the wood may not take fire from the friction.

When the Whale returns to breathe, the harpooner inflicts a fresh wound; till at length the immense animal faints from loss of blood: the men now venture to row the boat quite up to him; and a long steeled lance is thrust into his breast, and through the intestines, which soon puts an end to his existence.

The carcass no sooner begins to float, than holes are cut in the fins and tail; and ropes being fastened to these, it is towed to the ship, where it is fastened in such a manner that the back floats in the water.

The operation next to be performed, is that of taking out the blubber and whalebone. Several men get upon the animal with a sort of iron spurs, (to prevent them from slipping,) and separate the tail, which is hoisted on deck: they then cut out square pieces of blubber, weighing two or three thousand pounds each, which are also hoisted up. These are here cut into smaller pieces, which are thrown into the hold, and left for three or four days to drain. When all the blubber is cut from the belly of the Whale, it is turned on one side,

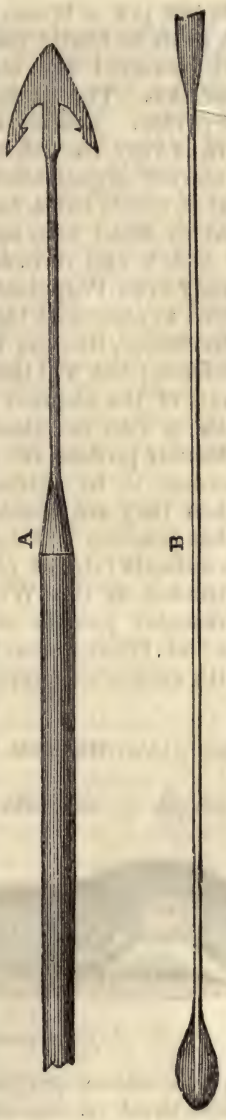
by means of a piece of blubber left in the middle, called the cant, or turning-piece. The men then cut out this side in large pieces, as before; and also the whalebone, with the gums, which are preserved entire, and hoisted on deck, where the blades are cut and separated, and left till the men have time to scrape and clean them. The Whale is next turned with its back upward, and the blubber is cut from the back and crown bone. The men conclude the whole process by cutting the blubber from the other side. But previously to letting the remainder of the body float away, they cut out the two large upper jaw-bones; which being hoisted on deck, are cleansed and fastened to the shrouds, and tubs are placed under them to receive the oil which they discharge. This oil is a perquisite belonging to the captain.

In three or four days the seamen hoist the pieces of blubber out of the hold, chop them, and put them, by small pieces, into casks, through the bung-holes.

A Whale, the longest blade of whose mouth measures nine or ten feet, will yield about thirty butts of blubber; but some of the largest yield upwards of seventy. One of the latter is generally worth about five thousand dollars: and a full ship, of three hundred tons burden, will produce more than twenty-five thousand dollars from one voyage.

Premiums on every Whale that is taken are given to all persons engaged, from the captain, even to the men who row the boats. These rewards tend to excite their activity in the service of their employers.

The fishing season begins in May, and continues through the months of June and July; but whether the ships have had good or bad success, they must come away and get clear of the ice by the end of August.



INSTRUMENTS FOR WHALE FISHING.

OF THE CACHALOT TRIBE

THE upper jaw is broad, and entirely destitute of teeth, or has teeth, so short, as to be nearly concealed in the gum. The under jaw is narrow, and furnished with large, conical teeth, which fit into sockets in the upper jaw. The spiracles, or breathing holes, have only a single external orifice. The bodies of these animals are entirely naked, and their skin is very smooth and soft.

The interior organization of the Cachalots, is somewhat different from that of the Whales, and requires a nourishment more substantial than that of small fish, and marine molusca. The Cachalots consequently attack and devour several of the larger kinds of fish, and occasionally even Porpoises, Dolphins, and young Whales, which they are enabled to seize and tear in pieces by means of their teeth. They are not contented, like the Whales, with merely exerting their strength in self-defence; but will themselves provoke a combat with the larger inhabitants of the element in which they reside, and will attack and destroy them with the utmost vigor and address. Their ferocity and their muscular powers are such, that all the species are considered by the fishermen to be extremely dangerous. It is said that some of them, when they are attacked, will throw themselves on their back, and in that position will defend themselves with their mouth.

These animals inhabit chiefly the Northern Ocean, and nearly the same latitudes as the Whales. They frequently swim in troops. Their muscular powers are very great; and notwithstanding their immense and blunt heads, they are able to cut their way through the water with astonishing rapidity.

THE BLUNT-HEADED CACHALOT, OR SPERMACETI WHALE.

The length of the Blunt-headed Cachalot, when full grown, is about seventy feet, and its girth about fifty. When viewed from above, it appears like an immense animated mass, truncated in front, so that the muzzle terminates in a somewhat squared, and almost perpendicular extremity. The head constitutes nearly one third of the whole body: the mouth is situated at the under part, and the under jaw is so small, in comparison with the upper, as to have somewhat the appearance of the lid or cover of an enormous box turned upside down. The eyes are situated above the corners of the mouth, and are so minute, as to be scarcely perceptible. The pectoral fins are each about three feet in length. On the posterior part of the back there is a longitudinal and callous

THE CATCHALOT

protuberance, or spurious fin. The tail is very short and slender, each of the lobes being hollowed somewhat like the blade of a scythe. The skin is smooth, oily, and almost as soft to the touch as silk. Its color is usually black.

The velocity with which these Cachalots dart through the water is greater, and their progressive motion is performed by much more elevated bounds or curves, than those of many of the Whales. They generally swim in troops, consisting of a great number of both males and females. In the month of March, 1784, there were thirty-two Spermaceti Whales cast on shore, during a violent gale of wind, in the neighborhood of Audierne, in France. Their bellowing was heard to the distance of more than a league. Two men, who happened to be walking along the coast not far from the place where the animals were stranded, not conceiving what they could possibly be, were thrown into the utmost agitation and alarm at their noise, and at seeing them floundering in the shallow water, and beating about the sand and mud in all directions, at the same time occasionally throwing water from their spiracles to an immense height, and with tremendous noise. They were all young animals, but the smallest of the whole measured upwards of thirty feet, and the largest nearly fifty feet in length. They were not able to regain the sea; but they continued alive on the sand for upwards of twenty-four hours.

Few animals are more voracious than these, nor can we be surprised at their voracity, when we consider their enormous bulk, and the immense quantity of nourishment which they must of necessity require. They feed on various kinds of fish which swim in shoals, nor do they seem to refuse any marine animals that come in their way. They swallow myriads of the different kinds of mollusca, particularly Cuttle-fish, the beaks or jaws of which are often found in their stomachs and intestines; and they pursue and attack Dolphins, Porpoises, and even several species of Sharks. We are informed by Fabricius, that the tremendous White Shark, so much dreaded by the other inhabitants of the ocean, flees with precipitation from the Blunt-headed Cachalot: that, in the excess of its alarm, it will often dart to the bottom of the ocean, and endeavor to conceal itself, in the sand or mud, from the piercing sight of its adversary: that it will sometimes incautiously throw itself against the rocks, with such force as to occasion its almost immediate death: and that, notwithstanding its usual voracity, this Shark will not dare to approach even the dead body of the Cachalot.

There is, in the upper part of the skull of the Cachalots, an immense cavity perfectly distinct from the cavity which contains the brain. This occupies nearly one-fourth part of the whole head, extending from the front almost to the eyes, and being sometimes as much as sixteen or eighteen feet in length. It is divided horizontally into two parts by a strong membrane; and each of these parts is again subdivided, by vertical membranes, into numerous cells, which communicate with each other, and which contain a peculiar kind of fat, denominated (though very improperly) *spermaceti*. This, which has frequently been mistaken for the brain, is sometimes found in such quantity, that

eighteen or twenty butts of it have been taken from the head of the largest Cachalot. The spermaceti, when the animals are alive, is fluid; but when cold it is of a whitish color, and is found in somewhat solid lumps.

The oil produced from this Cachalot is not by any means in such quantity as that produced from some of the Whales; but, in quality, it is far preferable, since it yields a bright flame, without at the same time exhaling any nauseous smell. The flesh is of a pale red color, appearing not much unlike coarse pork, and it is said to be very palatable as food.

The substance known by the name of ambergris, is produced from the body of this animal. It is generally found in the stomach, but sometimes in the intestines; and, in a commercial view, is a highly valuable production. As we see it in the shops, it is an opaque substance, which varies in solidity according to its exposure to a warm or cold atmosphere.

Although this animal is most frequently met with in the Northern Ocean, in the latitudes of Greenland, Spitzbergen, and Iceland, yet it is occasionally seen off the British coasts, and sometimes even in the Mediterranean Sea.

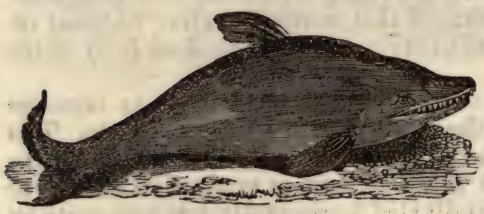
OF THE DOLPHINS IN GENERAL.

THE Dolphins have a row of large teeth in each jaw; and the spiracles have only a single external orifice, which is situated near the top of the head.

These animals inhabit various seas, being occasionally found both in hot and cold climates. They are much smaller than the Whales; the largest species seldom exceeding twenty or five-and-twenty feet in length. They are often seen in shoals, of from five or six to twenty and upwards in number, gambolling about the ocean. Their food consists almost wholly of fish, and principally of Mackerel and Herrings.

THE COMMON DOLPHIN.

The body of the Dolphin is oblong and roundish, and the snout narrow and sharp-pointed, with a broad transverse band, or projection of skin, on its upper part. This is a longer and more slender animal than the porpoise; it measures nine or ten feet in length, and about two feet in diameter. The body is black above and white below. The mouth is very wide, reaching almost to the thorax, and contains forty teeth; twenty-one in the upper, and nineteen in the under jaw: when the mouth is shut, the teeth lock into each other.



DOLPHIN.

Dolphins are occasionally observed in almost every part of the ocean,

among the ice-bays round the polar circles, in the climates of the temperate zones, and under the vertical sun of the equatorial seas.

They are predatory animals, and pursue, with avidity, various species of fish, but particularly Cod, Herrings, and Flat-fish. In some countries they are known to follow the shoals of Mullets, sometimes even into the nets of the fisherman. Their motions in the water are performed with such wonderful rapidity, that the French sailors frequently call the Dolphin *la fléche de la mer*, or "the sea-arrow," and Rondelet says, that persons who tormented themselves to do what was considered impossible, were often proverbially compared to those who would hold a Dolphin by the tail. M. de Saint Pierre, in his voyage to the Isle of France, assures us that he saw a Dolphin swim, with apparent ease, round the vessel in which he was sailing, though it was going at the rate of six miles an hour. A shoal of these animals followed the ships of Sir Richard Hawkins upwards of a thousand leagues. They were known to be the same by the wounds they occasionally received from the sailors. Dolphins are greedy of almost any kind of scraps that are thrown overboard; and consequently are often to be caught by means of large iron hooks, baited with pieces of fish or garbage. They are fond of swimming round casks or logs of wood, which they find driving in the sea. They generally swim in troops, and their progressive motion in the water somewhat resembles the undulating motion of a ship under sail. Their evolutions and gambols on the surface of the ocean, sometimes afford a most interesting and entertaining spectacle. By curving their body, and suddenly extending it, like Salmon and some other kinds of fish, they are enabled to leap to a very considerable height above the surface of the water. When they are in eager pursuit of prey, and sometimes even in their gambols, these leaps have been repeated with such astonishing celerity, that it is scarcely possible to conceive how, in such short intervals, the necessary force could be impressed. They have been known, on these occasions, to spring forward to a distance of more than twenty feet at a single bound.

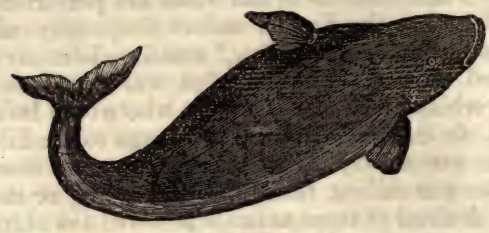
The Dolphin was in great repute among the ancients, and both philosophers and historians seem to have contended who should relate the greatest absurdities respecting this animal. It was consecrated to the gods, was celebrated for its love of the human race, and was honored with the title of the Sacred Fish. In all cases of shipwreck the Dolphin was believed to be in waiting, to rescue and carry on shore the unfortunate mariners. Arion, the musician, when thrown overboard by the pirates, is said to have been indebted for his life to one of these animals.

How these absurd tales originated, it is impossible even to conjecture; for Dolphins certainly exhibit no marks of peculiar attachment to mankind. If they attend on vessels navigating the ocean, it is in expectation of plunder, and not of rendering assistance in cases of distress. By the seamen of the present day they are held rather in abhorrence than esteem; for their frolics on the surface of the water are almost the sure signs of an approaching gale.

The flesh of these animals was formerly held in great esteem; it is, however, very dry and insipid: the best parts are those near the head.

THE PORPOISE.

The Porpoise is well known in all the European seas. In its general form it very much resembles the Dolphin; it is, however, somewhat less in size and has a snout both much broader and shorter. It is generally from six to seven feet in length; thick in the fore parts, and gradually tapering towards the tail. The color is either a bluish black, or a very dark brown above, and nearly white beneath.



PORPOISE.

This animal has a great resemblance to the Dolphin, both in its general external appearance, and in its habits of life. It has the same qualities, and even the same affections, and yet how different has been its general estimation with mankind! The Dolphin was consecrated to the gods, and the Porpoise has, in nearly all languages, been degraded by the appellation of *Sea-hog*. But the Dolphin is indebted for its high repute to the vivid imaginations of the Grecian poets, whilst the Porpoise, almost unknown to the ancients, has received its name from sailors and fishermen. In the naturalist, however, they excite equal interest, and from him they are deserving of equal attention.

It is seldom that Porpoises are seen except in troops of from six or seven, to thirty and upwards, in number. The great size of their caudal fin, and the strong muscles of their tail, contribute to render them very active in the water; along the surface of which, like the Dolphins, they sometimes move with surprising rapidity. They frequently gambol about on the water with great vivacity. Their appearance is believed by seamen to be prognosticative of approaching storms; and, on that account, they are held in great detestation. During the most tempestuous weather they are able to surmount the waves, and to pass along the agitated surface of the ocean, fearless of danger, and secure from injury.

They feed on nearly all kinds of fish, but particularly on such as swim in large shoals; as Mackerel, Herrings, and Cod of different kinds, which they pursue with astonishing voracity. But not only do they seek for prey near the surface of the water: they also occasionally descend to the bottom, and root about among the sand and mud, for flat-fish and marine worms. We are informed, likewise, that whenever a Porpoise happens to be wounded, all the rest of the troop will immediately attack and devour it.

The females seldom produce more than one young-one at a birth. The period of gestation, according to Anderson, is only six months; but according to Aristotle, it is ten months, which seems much the

most probable. The offspring are said to continue with the mother for nearly a year after they come into the world.

In the river St. Lawrence, in Canada, these animals, are very numerous, and, as they there generally frequent the shoal-water in search of prey, the natives adopt the following method of catching them. When the fishing-season arrives, the people collect together a great number of sallow twigs, or slender branches of other trees, and stick them firmly into the sand-banks of the river, which at low water are left dry: this is done on the side towards the river, forming a long line of twigs at moderate distances, which at the upper end is connected with the shore, an opening being left at the lower end, that the Porpoises may enter. As the tide rises, it covers the twigs so as to keep them out of sight: the Porpoise, in quest of his prey, gets within the line, where he continues his chase till he finds, by the ebbing of the tide, that it is time to retire into deep water. He now makes towards the river; but the twigs being then in part above water, and being all agitated by the current, he no sooner sees them shaking about, than he takes fright, and retreats backward as far as he can, from this tremendous rampart. The tide still continuing to ebb, he returns time after time; but, not being able to overcome his dread of these terrific twigs, he rolls about until he is deserted by the water; when those who placed the snare rush out in numbers, properly armed, and in this defenceless state overpower him with ease. In this manner more than a hundred of these huge creatures (one of which will yield about a hogshead of oil) have been killed at a single tide.

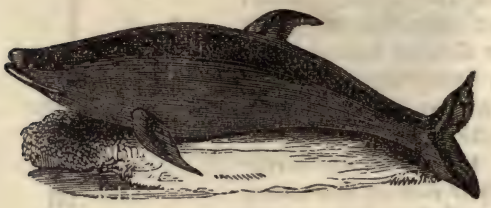
SKELETON OF A PORPOISE.

The Porpoise was once considered a sumptuous article of food, and is said to have been occasionally introduced at the tables of the old English nobility. It was eaten with a sauce composed of sugar, vinegar, and crumbs of bread. It is, however, now generally neglected, even by the sailors.

In America, the skin of this animal is tanned and dressed with considerable care. At first it is nearly an inch thick; but it is shaved down till it is quite thin, and becomes somewhat transparent. It is made, by the inhabitants, into waistcoats and breeches; and is said also to make an excellent covering for carriages.

THE GRAMPUS.

The length of this animal is usually from twenty to twenty-five feet. In its general form and color it much resembles the rest of its tribe; but the lower jaw is considerably wider than the upper, and the body, in proportion, is somewhat broader and more deep. The back fin sometimes measures six feet in length.



GRAMPUS.

It is found in the Mediterranean Sea, as well as in both the Northern and Southern Oceans.

The Grampus is a decided and inveterate enemy to the different species of Whales; great flocks of them attack the largest of these, fastening around them like so many bull-dogs, making them roar out with pain, and frequently killing and devouring them. They are also said to attack and devour the Seals, which they occasionally find sleeping on the rocks; dislodging them by means of their back fin, and thus precipitating them into the water.

Their agility is such, that these animals are not often caught. They seldom remain more than a moment above the surface of the ocean; but their eager pursuit sometimes throws them off their guard, and allures them into shallow waters. In this case they continue to flounder about, till they are either knocked on the head by persons who happen to observe them, or till the tide flows in to their relief. In one of the poems of Waller, a story (founded on fact) is recorded, of the parental affection of these animals. A Grampus and her cub had got into an arm of the sea, where, by the desertion of the tide, they were enclosed on every side. The men on shore saw their situation, and ran down upon them with such weapons as they could at the moment collect. The poor animals were soon wounded in several places, so that all the immediately surrounding water was stained with their blood. They made many efforts to escape; and the old one by superior strength, forced itself over the shallow water into the ocean. But, though in safety herself, she would not leave her young-one in the hands of assassins. She therefore again rushed in; and seemed resolved, since she could not prevent, at least to share the fate of her offspring. The story concludes with poetical justice; for the tide coming in, conveyed them both off in safety.

BIRDS.

RAPACIOUS BIRDS.

In the Birds which constitute the present order, the bill is some what hooked, having the upper mandible or division either dilated a little towards the point, or furnished with a tooth-like process. The nostrils are open. The feet are stout, and armed with strong hooked claws three placed forward, and one backward.

OF THE VULTURES IN GENERAL.

The Vultures have their bill straight, and hooked only at the end; its edges are sharp, like a knife, and the base is covered with a thin skin. The head, cheeks, and, in many species, the neck, are either naked, or clad only with down or short hairs. The tongue is large, fleshy, and cleft at the end. The craw often hangs over the breast. The legs and feet are covered with great scales; and the first joint of the middle toe is connected to that of the outermost by a strong membrane. The claws are large, somewhat hooked, and very blunt; and the inside of the wings is covered with down.

The characters which principally distinguish the Birds of this tribe from the Eagles and Falcons, are the want of feathers on part of the head, and sometimes even on the whole head and neck; and their voracious manners, as they never kill prey from *choice*, but in general devour only such animals as are either dying, or are found dead and putrid. Their sense of smelling is so exquisite, that they are able to scent a dead body at the distance of many miles. "They are (says Mr. Pennant) greedy and voracious to a proverb; and not timid, for they prey in the midst of cities, undaunted by mankind." After some of the battles in the East, where vast slaughter takes place, of Elephants, Horses, and men, voracious animals crowd to the field from all quarters, and of these, Jackals, Hyænas, and Vultures, are the chief. Even in the places where the last are otherwise seldom observed, the plain will on such occasions be found covered with them. Vast multitudes will be seen in the air, descending from every side,

to partake of the carnage. These the Indians believe to be brought by having an instinctive presentiment of slaughter, some days before the event.

It is observed that Vultures, in general, become less numerous as the climate becomes colder; and that, in the more northern countries, they are never found. Their presence is a kind disposition of Providence in the hotter regions, to prevent the putrid effluvia of the dead from too much injuring the health of the living.

THE CONDOR.

This bird considerably exceeds in size the largest eagle. Its expanded wings sometimes extend to the dimensions of eighteen feet. Its body, bill, and talons, are proportionably large and strong; and its courage is equal to its strength. The throat is naked, and of a red color. The upper parts, in some individuals, (for they differ greatly in color,) are variegated with black, grey, and white; and the belly is scarlet. The head of a Condor that was shot at Port Desire, off Penguin Island, resembled that of an eagle; except that it had a large comb upon it. Round the neck it had a white ruff, much resembling a lady's tippet. The feathers on the back were as black as jet, and perfectly bright. The legs were remarkably strong and large; the talons like those of an eagle, except that they were not so sharp: and the wings, when extended, measured, from point to point, twelve feet in the Leverian Museum there were two specimens of the Condor, supposed to be male and female; on the breast they had a kind of pendulous, pear-shaped substance. The male measured ten feet from tip to tip of the wings. The Condor is an inhabitant of South America.

CONDOR.

Of the strength of this enormous bird we may form some idea, from the account that has been given of one of them which was shot

by Father Feuillée, in the valley of Ylo in Peru. He informs us, that he discovered a Condor perched upon a great rock; and that he approached it within musket-shot and fired; but that, as the gun was only loaded with swan-shot, the lead could not do much more than pierce its feathers. He perceived, however, from its motions, that it was wounded: for it rose heavily, and could with difficulty reach another great rock, five hundred paces distant. He therefore charged his piece with a bullet, and hit the bird under the throat. He then saw that he had succeeded, ran to secure his victim: but it struggled obstinately with death; and, resting upon its back, repelled his attempts with its extended talons. He continues, "I was at a loss on what side to lay hold of it; and I believe that if it had not been mortally wounded, I should have found great difficulty in securing it. At last I dragged it down from the top of the rock; and, with the assistance of a sailor, carried it away to my tent."

CONDOR AND FISH.

Some writers have affirmed that the Condor is twice as large as an Eagle, and so strong that it can pounce upon and devour a whole Sheep; that it spares not even Stags, and can easily overthrow a man. Others say, that its beak is so firm that it can pierce a Cow's hide, and that two Condors are able to kill an Ox and devour the carcass.

Ulloa states, that he once saw, in South America, a Condor seize and fly away with a Lamb. "Observing (says he) on a hill adjoining to that where I stood, a flock of Sheep in great confusion, I saw one of these birds flying upwards from among them, with a Lamb between its claws; and when at some height, it dropped it. The bird immediately followed, took it up, and let it fall a second time; when it flew out of sight, on account of the Indians, who, alarmed by the cries of the boys and the barking of the Dogs, were running towards the place.

Frezier, in a voyage to the South Seas, also thus describes the Condor:—"We one day killed a bird of prey called the Condor; which measured nine feet from the end of one wing to the end of the other, and had a brown comb or crest, but not jagged like that of a Cock. The fore part of the throat was red, without feathers, like that of a Turkey. These birds are generally large and strong enough to take up a Lamb. In order to separate one of those animals from the flock, they form themselves into a circle, and advance towards them with their wings extended, that, by being driven too close together, the full-horned

Rams may not be able to defend their young-ones. They then pick out the Lambs, and carry them off. Garcillasso says, there are some Condors in Peru which measure sixteen feet from the point of one wing to that of the other, and that a certain nation of Indians adore them."

These enormous animals make their nests among the highest and most inaccessible rocks. The female lays two white eggs, somewhat larger than those of a Turkey,

CONDOR.

In the country which they inhabit, they seem to supply the place of Wolves; and they are as much feared by the inhabitants, as Wolves are in other climates. In consequence of this, many modes of destroying them are adopted. Sometimes a person, covering himself with the hide of a newly-skinned animal, goes out, and so manages it, that the bird is induced to attack him in this disguise; other persons that have hidden themselves, then come forward to his assistance; and then all of them, at once falling on the bird, overpower and kill it. A dead carcass is also sometimes put within a very high enclosure; and when the Condor has satiated himself, and is unable to rise freely, persons are in readiness to subdue him. On these latter occasions the bird is inactive; but in general he possesses a very quick flight, and frequently soars to a height beyond the reach of human vision. Sometimes these birds are caught by means of traps and springes.

It has generally been imagined, that the accounts of this dreadful animal gave rise to the exaggerated description of the bird that makes so conspicuous a figure in the Arabian Tales, under the name of *Roc:* but this seems very improbable, as we have no satisfactory evidence of the Condor having ever been found on the Old Continent. The traditions respecting the Roc originated in a very different kind of bird; a variety of the bearded Eagle, or the well-known Lammergeyer of the Alps, which is occasionally seen among the mountains of the East.

THE CARRION VULTURE.

The length of this bird is about four feet and a half, and its general weight between four and five pounds. The head is small; and covered with a red skin, beset only with a few black bristles; which gives it a distant resemblance to a Turkey. The whole plumage is dusky, mixed with purple and green. The legs are of a dirty flesh-color, and the claws black.

CARRION VULTURE.

In some of the countries bordering upon the torrid zone, these birds haunt the villages and towns in immense multitudes. In Carthagena, they may be seen sitting on the roofs of houses, or even stalking along the streets. They are here of infinite survice to the inhabitants, by devouring that filth which otherwise, by its intolerable stench, would render the climate still more unwholesome than it is. When they find no food in the cities, they seek for it among the cattle of the adjoining pastures. If any animal be unfortunate enough to have a sore on his back, they instantly alight on it, and attack the part affected. The unfortunate beast may in vain attempt to free itself from the gripe of their talons: even rolling on the ground is of no effect, for the Vultures never quit their hold till they have completed its destruction.

In few creatures are the designs of Providence more clearly developed than in these. Filthy as they are in their manners, their appearance, and their smell, yet is even this filthiness a blessing to mankind. In hot climates, putridity takes place in a few hours after death, what might be the effects of the aggregated stench, if it were not for the exertions of animals of this description! But in some countries they are rendered even of still further importance to mankind, by destroying the eggs of the Alligator, an animal which otherwise must become intolerable by its prodigious increase. They watch the female Crocodile in the act of depositing her eggs in the sand; and no sooner does she retire into the water, than they dart to the spot and feast upon the contents of the eggs.

The resemblance of these birds at a distance, to the Turkey, was the cause of considerable vexation to one of the officers engaged in the expedition round the world under Woodes Rogers. In the island of Lobos, immense numbers of them were seen; and, highly delighted with the prospect of such delicious fare after a long and tedious voyage, the officer would not wait even till the boat could put him ashore,

but, with his gun in his hand, leapt overboard and swam to land. Approaching a large collection of the birds, he fired among them and killed several: but when he came to seize his game, he was sadly disappointed in finding that they were not Turkeys, and that their stench was almost insupportable.

The bodies of the Carrion Vultures are extremely offensive to the smell; and they perch at night on rocks or trees, with their wings partly extended, apparently to purify themselves. They soar to a vast height, and have in the air the sailing motions of the Kite. Carrion and filth of almost every description are their favorite food; and, from the acuteness of their scent, they can distinguish prey at an immense distance. They will eat even Snakes, and sometimes seize on live Lambs. When a dead body of considerable size is thrown out, they may be observed coming from all quarters, each wheeling about in gradual descent till he reaches the ground. They are not easily driven from their prey; but, when in the act of devouring it, will suffer persons to approach very near them.

THE AQUILINE, OR EGYPTIAN VULTURE.

The male is entirely white, except the quill-feathers, which are black, edged with hoary. The female is brown, with the same exception of the quill-feathers. The two outermost primaries of each wing in the male, and the four outermost in the female, are entirely black. The head and neck are naked and wrinkled. The eyes are large and black; the beak is black and hooked, having its base covered with a yellow cere; and the talons are large and extended.

These disgusting animals frequent the sterile and sandy country around the Pyramids. Extensive flocks of them are also found in Cairo, where they feed on offal and dead animals in the streets promiscuously with the Dogs. Every morning and evening they assemble with the Kites, in the square below the castle, in order to receive the alms of fresh meat that have been left to them by the legacies of various wealthy men. By the ancient Egyptians these birds were esteemed sacred; and Herodotus informs us, that it was considered a capital crime to put one of them to death.

Their appearance is as horrid as can be imagined in any animal; and their whole body, from their habits of life, is covered with filth. Notwithstanding this, the inhabitants of the countries where they abound cannot be too thankful to Providence for supplying them with these active scavengers, to cleanse their towns and villages of the filth and putridity which otherwise, under a burning sun, and on lands often inundated by the river which fertilizes them, would fill the atmosphere with the most noxious exhalations.

In Palestine they are of infinite service, in destroying the vast multitudes of Rats and Mice which breed in the fields; and which without their assistance, would devour the whole fruits of the ground. They also frequent the deserts, and there devour the bodies of men and animals which perish in those desolated regions. They every

year follow the caravan from Egypt to Mecca, in order to feast upon the flesh of slaughtered beasts, and the carcasses of the camels which die on the journey.

So little are these birds alarmed by the presence of mankind, that they will not even quit the places which they haunt, even when fired at with guns; but after a short flight they immediately return. If one of them be killed, the rest surround and devour it. The Vulturine Caracaro Eagle is probably a Vulture. It is found in Brazil, and feeds on carrion.

THE CAPE VULTURE.

This Vulture, in many particulars, resembles the last species. Its head, however, is of a bright blue color, covered with a yellowish down. The plumage is somewhat of a coffee color. The small coverts of the wings are dark, and the quill-feathers blackish. The legs are brown, and the beak and claws nearly black.

The sloth, the filth, and the voracity of these birds, almost exceed credibility. Whenever they alight on a carcass that they can have liberty to tear at their ease, they gorge themselves in such a manner that they become unable to fly, and even if pursued can only hop along. At all times they are birds of slow flight, and are unable readily to raise themselves from the ground; and when overfed, they are utterly helpless. On the pressure of danger, however, they have the power of ridding themselves of their burden, by vomiting up what they have eaten; and then they fly off with great facility.

They frequent all the country at the Cape of Good Hope; and are so familiar, that they often descend, in great numbers, near the entrance to the shambles of the Cape Town, and there devour the heads, entrails, and other offals, of the animals slaughtered for the market. On the sea-shores they are also very abundant, voraciously devouring all such animal substances as have been thrown upon the coast by the tides. They subsist likewise on crabs, tortoises, shell-fish, and even locusts.

In anatomizing a dead animal, Kolben informs us that these birds exhibit infinite dexterity. They separate the flesh from the bones in such a manner as to leave the skin almost entire. On approaching a body thus destroyed, no person, till he had examined it, could possibly imagine that it was merely bone and skin, deprived entirely of the internal substance. They begin by tearing an opening in the belly, through which they pluck out and greedily devour the entrails: then entering the hollow, they also tear away all the flesh; and this without

affecting the external appearance. "It often happens (says this writer) that an ox returning home alone to his stall from the plough, lies down by the way; it is then, if the Vultures perceive it, that they fall upon it with fury, and inevitably devour the unfortunate animal. They sometimes attempt the oxen while grazing in the fields; and, to the number of a hundred or more, make their sudden attack all together."

Ravenous as these animals are, they are capable of existing for a great length of time without food. In the deserts their subsistence is sometimes very precarious. M. Le Vaillant states that in the crop of some that he had killed, he had found nothing but pieces of bark, or a small quantity of clay; in the crop of others he had found only bones; and again, of others, the dung of animals. When urged by hunger, they are frequently known to devour their own species.

THE KING VULTURE.

KING VULTURE.

The King Vulture is also a native of South America, seldom if ever being seen north of Florida. Travellers relate that this species keeps the other Vultures under subjection, and does not suffer them to approach a dead animal until he has completely satisfied his own appetite, which is certainly none of the smallest.

THE GRIFFON VULTURE.

The Griffon Vulture is found in almost all parts of the old world. It is one of the largest of its group, measuring upwards of four feet in length. Like most of the Vultures, it does not appear to move its wings while flying, but soars on expanded pinions in large circles, apparently gaining the necessary impetus by the movements of its head and body, just as an accomplished skater uses but little force in his various evolutions—an imperceptible inclination of the head, or sway of the body, sufficing to keep up the impetus gained at starting, and to bring him round in any direction he chooses.

GRIFFON VULTURE.

Vultures are generally protected by the natives of the countries where they reside on account of their great utility in clearing away the putrid animal matter, which would otherwise be exceedingly injurious as well as disagreeable. The Turkey Buzzard or John Crow (*Cathartes Aura*), or Jamaican Vulture, is protected by a fine of five pounds, inflicted on any one who destroys the bird within a certain distance of the principal towns. Waterton's account of this bird is very interesting, and well worthy of notice. There are many different species of Vultures inhabiting different countries, but their habits as well as their forms are so similar that a detailed description of each is needless.

THE TURKEY VULTURE.

The Turkey Vulture is about two and a half feet in length, and six in breadth. Eyes dark or reddish-hazel. The head and neck for about an inch and a half below the ears, furnished with a reddish wrinkled skin, and tints of blue sprinkled with short black hairs. From the hind-head to the neck-feathers the space is covered with a black down. The forepart of the neck is bare to the breast-bone. The plumage of the neck is large and tumid, and, with that of the back and shoulders, nearly black; almost all the rest of the body is of the same color, in parts inclining to brown. Third primary feather longest. The wings extend to the end of the tail. The upper plumage is generally glossed with green and bronze, having purplish reflections. Legs feathered to the knees; the feet somewhat webbed. The bill nearly white often tipped with bright olive green. Weight from four and a half to five pounds.

TURKEY VULTURE OR BUZZARD.

TURKEY BUZZARD.

OF THE FALCON OR EAGLE TRIBE.

The bill is hooked; and is furnished at the base with a naked membranaceous skin, called *cere*. The head and neck are thickly beset with feathers. The nostrils are small, and placed in the cere; and the tongue is broad, fleshy, and generally cleft at the end. The legs and feet are strong, muscular and scaly; and the large, hooked, and very sharp claws, are well calculated for the predacious habits of the animals. The middle toe is connected to the outermost by a strong membrane, and the claw of the outer toe is smaller than that of any of the others.

This tribe differs from the last principally in the animals having their bill and claws much more hooked and sharp; in having the head and neck in general thickly covered with feathers, instead of being naked, or covered only with down; and also in their usually killing their prey and eating it while fresh. The exuviæ and bones of their food they always emit at the mouth, in the form of round pellets.

This, as well as the last, is an excessively rapacious tribe of birds. They prey altogether on animal food; yet they seldom feed on carrion, except when driven to it by necessity. They are able to sustain hunger for a very great length of time; often taking in as much food at once, as will last them for several days without a fresh supply. Many of these species eat fish, and others are content to subsist on snakes and reptiles.

They never associate; and, except during the breeding season, even two of them are seldom seen together. They are extremely quick sighted, and soar to amazing heights in the air. When they discern their prey, they dart upon it with the swiftness of an arrow: and their strength is so great, that some of them have been known to carry to their offspring a load nearly as heavy as themselves, and from a distance of forty miles and upwards. Most of them build their nests in lofty and inaccessible places; but a few of the species form them on the ground. In general the females are much larger than the males; for the purpose, as some persons have conjectured, of more easily providing food for their offspring.

About a hundred and forty different species have been discovered, of which upwards of twenty are natives of Great Britain; but, from the extreme difference in appearance, between many of the males and females of the same species it is sometimes a difficult task to ascertain them.

THE SECRETARY FALCON.

This bird, when standing erect, measures about three feet from the top of the head to the ground. The bill is black, sharp, and crooked, like that of an Eagle. The cere is white; and round the eyes there is a place bare of feathers, and of a deep orange color. The upper eyelids are beset with strong bristles, like eye-lashes. The general color of the plumage is a bluish ash-color; and the ends of the wings, the thighs, and vent, are blackish. The tail is somewhat ash-colored, except at the end, which, for above an inch, is black, and then tipped with white: the two middle feathers are twice as long as any of the rest. The legs are long, brown, and stouter than those of a Heron; the claws are shortish, but crooked, and of a black color.

The Secretary Falcon is a native of the interior parts of Africa, Asia, and the Philippine Islands.

In its general form this bird resembles, in some degree, both the Eagle and the Crane; having its head shaped like that of the former, and its body somewhat like that of the latter. From the back of the head spring several long dark-colored feathers, that hang loose behind like a pendant crest, which the bird can erect or depress at pleasure. "The Dutch (says M. Le Vaillant) gave to it the name of Secretary, on account of the bunch of quills behind its head: for in Holland, clerks, when interrupted in their writing, stick their pen in their hair behind their right ear; and to this the tuft of the bird was thought to bear some resemblance."

The Hottentots at the Cape of Good Hope distinguished this bird by a name that signifies the Serpent-eater; and it would almost seem that nature had principally destined it for the purpose of confining within due bounds the race of Serpents, which is very extensive in all the countries that this bird inhabits.

The mode in which it seizes these dangerous creatures is very peculiar. When it approaches them, it is always careful to carry the point of one of its wings forward, in order to parry off their venomous bites; sometimes it finds an opportunity of spurning and treading upon its antagonist, or else of taking him on its pinions and throwing him into the air. When, by this proceeding, it has at length wearied him out, and rendered him almost senseless, it kills and swallows him at leisure without danger.

SECRETARY KILLING A SNAKE.

M. Le Vaillant tells us, that he was witness to an engagement between a Secretary Falcon and a Serpent. The battle was obstinate, and was conducted with equal address on both sides. But the Serpent at length feeling the inferiority of his strength, employed, in his attempt to regain his hole, all that cunning which is attributed to the tribe; while the Bird, apparently guessing his design, stopped him on a sudden and cut off his retreat, by placing herself before him at a

single leap. On whatever side the reptile endeavored to make his escape, his enemy still appeared before him. Then, uniting at once both bravery and cunning, the serpent boldly erected himself to intimidate the Bird, and, hissing dreadfully, displayed his menacing throat, inflamed eyes, and a head swollen with rage and venom. "Sometimes this threatening appearance produced a momentary suspension of hostilities; but the Bird soon returned to the charge, and covering her body with one of her wings as a buckler, struck her enemy with the bony protuberance of the other. I saw him at last stagger and fall: the conqueror then fell upon him to dispatch him, and, with one stroke of her beak, laid open his skull."

At this instant M. Le Vaillant fired at and killed the bird. In her craw he found, on dissection, eleven tolerably large Lizzards; three Serpents, each as long as his arm; eleven small Tortoises, most of which were about two inches in diameter; and a number of Locusts and other insects, several of them sufficiently whole to be worth preserving and adding to his collection. He observed, too, that, in addition to this mass of food, the craw contained a sort of ball, as large as the head of a Goose, formed of the vertebræ of Serpents and Lizards; shells of Tortoises; and wings, claws, and shields, of different kinds of Beetles.

Dr. Solander says, that he has seen one of these birds take up a Snake, a small Tortoise, or other reptile, in its claw, and dash it with so much violence against the ground, that the creature immediately died; if, however, this did not happen to be the case, he tells us that the operation was repeated till the victim was killed; after which it was eaten.

The Secretary is easily tamed; and when domesticated, will eat any kind of food, either dressed or raw. If well fed, it not only lives with poultry on amicable terms, but, when it sees any of them quarrelling, it will even run to part the combatants and restore order. This bird, it is true, if pinched with hunger, will devour, without scruple, the ducklings and chickens; but this abuse of confidence, if it may be so called, is the effect of severe hunger, and the pure and simple exercise of that necessity which rigorously devotes one half of the living creation to satisfy the appetite of the rest.

Tame Secretaries were seen by M. Le Vaillant in several of the plantations of the Cape. He says that they commonly lay two or three white eggs, nearly as large as those of a goose. The young-ones remain a great while in the nest; because, from their legs being long and slender, they cannot easily support themselves.

However shrewd and cunning this bird may be in its general conduct, yet M. de Buffon seems to have attributed to it a much greater degree of intelligence than it really possesses:—"When a painter (says he, quoting a letter of the viscount de Querhoent) was employed in drawing one of the Secretary Falcons, it approached him, looked attentively upon his paper, stretched out its neck, and erected the feathers of its head, as if admiring its own figure. It often came with its wings raised, and its head projected, to observe what he was doing. It also thus approached me two or three times, when I was sitting at a table, in its hut, in order to describe it." This stretching out of its

head, and erection of its crest, seem, however, to have arisen from nothing more than that love which almost all domesticated birds evince of having their heads scratched. And these birds, when rendered familiar, are well known to approach every person who comes near them, and to stretch out their necks by way of making known this desire.

This singular bird has not long been known, even at the Cape: but, when we consider its sociable and familiar disposition, we are disposed to think that it would be advisable to multiply the species, particularly in our colonies; for it is hardy enough to endure even European climates, where it might be serviceable in destroying not only pernicious reptiles, but Rats and Mice.

The Secretary Falcons make, with twigs, a flat nest, full three feet in diameter, and line it with wool and feathers. This is usually formed in some high tuft of trees; and is often so well concealed, as not easily to be discovered even by the most scrutinizing eye. It is a very singular circumstance, that in their contests these birds always strike forward with their legs; and not, like all others, backward.

THE WASHINGTON EAGLE.

The Washington Eagle, says Nuttall, bold and vigorous, disdains the piratical habits of the Bald Eagle, and invariably obtains his own sustenance without molesting the Osprey. The circles he describes in his flight are wider than those of the White-headed Eagle; he also flies nearer to the land or the surface of the water; and when about to dive for his prey, he descends in circuitous, spiral rounds, as if to check the retreat of the fish, on which he darts only when within the distance of a few yards. When his prey is obtained, he flies out at a low elevation to a considerable distance to enjoy his repast at leasure. The quantity of food consumed by this enormous bird is very great, according to the account of those who have had them in confinement. Mr. Audubon's male bird weighed fourteen and a half pounds avoirdupois.

THE BEARDED EAGLE, OR LAMMER-GEYER.

The beak is of a purplish flesh-color, and hooked only at the point; the head and neck are covered with feathers. Beneath the throat hangs a kind of beard, composed of very narrow feathers, like hairs. The legs are covered with feathers quite to the toes, which are yellow: the claws are black. The body is blackish-brown above; and the under parts are white, with a tinge of brown.

LAMMER-GEYER

The Bearded Eagles, of which so many fabulous tales have been related, are inhabitants of the highest parts of the great chain of the Alps that separates Switzerland from Italy, They are frequently seen of immense size. One that was caught in the canton of Glarus, measured from the tip of its beak to the extremity of its tail, nearly seven feet, and eight feet and a half from tip to tip of its wings; but some have been shot that were much larger.

These birds form their nests in the clefts of rocks, inaccessible to man; and usually produce three or four young-ones at a time. They subsist on alpine animals, such as Chamois, white Hares, Marmots, Kids, and particularly Lambs. It is from their devouring the latter, that they are called, by the Swiss peasants, *Lammer-geyer*, or Lamb-Vultures.* The Bearded Eagles seldom appear except in small parties, usually consisting of the two old birds and their young-ones.

If common report may be credited, this rapacious bird does not confine its assaults to the brute creation, but sometimes attacks and succeeds in carrying off young children. Gesner, on the authority of Fabricius, says, respecting it, that some peasants between Meissen and Brisa, in Germany, losing every day some of their cattle, which they sought for in the forests in vain, observed by chance a very large nest resting on three oaks, constructed with sticks and branches of trees, and as wide as the body of a cart. They found in this nest three young birds, already so large that their wings extended seven ells. Their legs were as thick as those of a Lion; and their claws the size of a man's fingers. In the nest were found several skins of Calves and Sheep.

It appears to have been from one of the two varieties of this bird that are sometimes seen in Persia and other eastern countries, rather than the Condor, as is generally supposed, that the fabulous stories of the *Roc* of the Arabian Tales originated; since the latter is confined to the wild districts of South America, and has never been ascertained to have visited the old continent.

One of these varieties also it is that Mr. Bruce describes as having

* It is, however, to be remarked that the Swiss do not confine the appellation of Lammer-geyer to this species, but sometimes extend it to other large birds of prey

seen on the highest part of the mountain of Lamalmon, not far from Gondar, the capital of Abyssinia. He says, that on account of the tuft of hair growing beneath its beak, the inhabitants call it *Abou Duch'n*, or Father Long-beard. Mr. Bruce supposed it to be not only one of the largest of the Eagle kind, but one of the largest birds in the creation. From wing to wing it measured eight feet four inches; and from the tip of its tail to the point of its beak, when dead, four feet seven inches. It weighed twenty-two pounds, and was very full of flesh. Its legs were short, but the thighs extremely muscular. Its eyes were remarkably small, the aperture being scarcely half an inch across. The crown of the head was bald, as was also the front, where the bill and skull joined.

"This noble bird (says this celebrated traveller) was not an object of any chase or pursuit, nor stood in need of any stratagem to bring him within our reach. Upon the highest top of the mountain Lamalmon, while my servants were refreshing themselves from that toilsome, rugged ascent, and enjoying the pleasures of a most delightful climate eating their dinner in the outer air, with several large dishes of boiled goat's flesh before them, this enemy, as he turned out to be to them suddenly appeared; he did not stoop rapidly from a height, but came flying slowly along the ground, and sat down close to the meat, within the ring the men had made round it. A great shout, or rather cry of distress, called me to the place. I saw the Eagle stand for a minute, as if to recollect himself; while the servants ran for their lances and shields. I walked up as nearly to him as I had time to do. His attention was fixed upon the flesh. I saw him put his foot into the pan, where there was a large piece, in water, prepared for boiling; but finding the smart, which he had not expected, he withdrew it, and forsook the piece that he held.

"There were two large pieces, a leg and a shoulder, lying upon a wooden platter: into these he thrust both his claws, and carried them off; but I thought he still looked wistfully at the large piece which remained in the warm water. Away he went slowly along the ground, as he had come. The face of the cliff over which criminals are thrown, took him from our sight. The Mahometans that drove the Asses, were much alarmed, and assured me of his return. My servants, on the other hand, very unwillingly expected him, and thought he had already taken more than his share.

"As I had myself a desire of more intimate acquaintance with this Bird, I loaded a rifle-gun with ball, and sat down close to the platter by the meat. It was not many minutes before he came, and a prodigious shout was raised by my attendants, 'He is coming, he is coming,' enough to have dismayed a less courageous animal. Whether he was not quite so hungry as at his first visit, or suspected something from my appearance, I know not; but he made a short turn, and sat down about ten yards from me, the pan with the meat being between me and him. As the field was clear before me, and I did not know but his next move might bring him opposite to some of my people, so that he might actually get the rest of the meat and make off, I shot him with the ball through the middle of his body,

about two inches below the wing, so that he lay down upon the grass without a single flutter.

"Upon laying hold of his monstrous carcass, I was not a little surprised at seeing my hands covered and tinged with yellow powder or dust. On turning him upon his belly, and examining the feathers of his back, they also produced a dust, the color of the feathers there. This dust was not in small quantites; for, upon striking the breast, the yellow powder flew in full greater quantity than from a hair-dresser's powder puff. The feathers of the belly and breast which were of a gold color, did not appear to have any thing extraordinary in their formation; but the large feathers in the shoulder and wings seemed apparently to be fine tubes, which, upon pressure, scattered this dust upon the finer part of the feather; but this was brown, the color of the feathers of the back. Upon the side of the wing, the ribs, or hard part of the feathers, seemed to be bare, as if worn; or, I rather think, were renewing themselves, having before failed in their functions.

"What is the reason of this extraordinary provision of nature, it is not in my power to determine. As it is an unusual one, it is probably meant for a defence against the climate, in favor of birds which live in those almost inaccessible heights of a country doomed, even in its lowest parts, to several month's excessive rain."

THE IMPERIAL EAGLE.

This is the largest species of Eagle known, measuring three feet and a half from the tip of the bill to the end of the tail; and to it may be referred all the accounts of the ancients respecting the strength, courage, and magnanimity of these birds. Its color above is rufous gray, barred with black, the black prevailing most on the wings; the head is strongly crested with long gray feathers, the two middle ones being five inches long; the tail is gray, barred and spotted with black, and tipped with rufous: the under parts of the bird are pale cinereous, very soft and downy; the beak and cere black; the feet and legs yellow. It is a native of South America, inhabiting the deep recesses of the forest; and has the reputation of being extremely bold and ferocious.

THE HARPY EAGLE.

It has been correctly observed by Mr. Selby, that the members of the aquiline division of the Raptorial order do not possess the same facility of pursuing their prey upon the wing which we see in the Falcons and Hawks; for though their flight is very powerful, they are not capable of the rapid evolutions that attend the aerial attacks of the above-named groups, in consequence of which their prey is mostly pounced upon the ground. The shortness of the wings of the Harpy Eagle, when compared with those of the Golden Eagle of Europe, and their rounded form and breadth, though well adapting them for a continued steady flight, render them less efficient as organs

of rapid and sudden aerial evolutions than those of the latter; but as it inhabits the woods, and does not prey upon birds, but animals incapable of saving themselves by flight, its powers of wing (or rather the modification of powers) are in accordance with the circumstances as to food and locality under which it is placed. If the Harpy Eagle soars not aloft, hovering over plains and mountains, it threads the woods, it skims amidst the trees, and marks the Sloth suspended on the branch, or the Monkey in unsuspicious security, and with unerring aim strikes its defenceless victims. Mr. Selby, commenting on the fierceness of a pair of Golden Eagles in his possession and their readiness to attack every one indiscriminately, observes that when living prey (as Hares, Rabbits, or Cats) are thrown to them, the animal is "instantly pounced on by a stroke behind the head and another about the region of the heart, the bill appearing never to be used but for the purpose of tearing up the prey when dead." It is precisely in this manner that the Harpy Eagle deals with his victims; death seems the work of an instant; the strongest Cat, powerless in his grasp, is clutched, and expires. Nor will this surprise any one who has contemplated the power seated in the talons of this bird; strong as are the talons of the Golden Eagle, great as is the muscular development of its limbs, and formidable as are its claws, they seem almost trifling compared with those of the Harpy Eagle. In the museum of the Zoological Society are skeletons of both these birds, which it is interesting to compare together. The thickness of the bones of the limbs in the latter, and especially of the tarsus, which is more than double that of the Golden Eagle, and the enormous size of the talons, are sufficient to convince the observer of the ease with which, when living, the fierce bird would bury its sharp-hooked claws in the vitals of its prey, and how vain resistance when the fatal grasp was taken. In its native regions the Harpy Eagle is said to be by no means common; were it so, the destruction occasioned by its presence would, it might be naturally expected, preponderate over the renovation of the species which constitute its habitual food, and the balance which nature has established between the destroyed and the destroying, the sanguinary and their victims, be thus disarranged. No doubt that, as is the case with all carnivorous animals, its numerical ratio in a given space is proportionate to that of the animals on which it is destined habitually to feed. Where the Sloth is most abundant, there will most abound the Harpy Eagle.

The general color of this noble bird is slate black; the head is light slate-gray, passing into dusky-black on the crest; the under parts are white, with a broad band of dark slate color across the chest. The tail is barred with black and slate color. The beak and claws are black; the tarsi yellow.

THE GOLDEN EAGLE.

The Golden Eagle is a large bird, weighing twelve or fourteen pounds; measuring in length three feet, and from tip to tip of his wings seven feet and a half. The bill is deep blue, and the cere yellow. The head and neck are of a dark brown, bordered with tawny: the hind part of the head is of a bright rust-color, and the rest of the body brown. The tail is blotched with ash-color. The legs are yellow, and feathered to the toes, which are scaly: the claws are remarkably large, the middle one being two inches in length.

GOLDEN EAGLE.

This bird is a native of Europe, and even of some of the more mountainous parts of Great Britain.

This Eagle has generally been considered by mankind, to hold the same fabulous or imaginary dominion over the birds, which has been attributed to the Lion over quadrupeds. M. de Buffon, adopting the idea, is also of opinion, that the Eagle and the Lion have many points of resemblance, both physical and moral. "Magnanimity (he says) is equally conspicuous in both; they despise the small animals, and disregard their insults. It is only after a series of provocations, after being teased with the noisy or harsh notes of the Raven or Magpie, that the Eagle determines to punish the temerity or the insolence of these birds with death. Besides, both disdain the possession of that property which is not the fruit of their own industry; rejecting with contempt the prey which is not procured by their own exertions. Both are remarkable for their temperance. This species seldom devours the whole of his game, but, like the Lion, leaves the fragments

and offals to other animals. Though famished for want of prey, he disdains to feed upon carrion.

"Like the Lion, also, he is solitary; the inhabitant of a desert, over which he reigns supreme, excluding all the other birds from his silent domain. It is perhaps even more uncommon to see two pairs of Eagles in the same tract of mountain, than two families of Lions in the same part of the forest. They separate from each other at such wide intervals, as to afford ample range for subsistence; and esteem the value and extent of their dominion to consist in the abundance of prey with which it is replenished.

"The eyes of the Eagle have the glare of those of the Lion, and are nearly of the same color; the claws are of the same shape; the organs of sound are equally powerful, and the cry equally terrible.* Destined, both of them, for war and plunder, they are equally fierce, bold, and intractable. It is impossible to tame them, unless they be caught when in their infancy. It requires much patience and art to train a young Eagle to the chase; and after he has attained his proper age and strength, his caprices and momentary impulses of passion, are sufficient to create suspicions and fears in his master. Authors inform us, that the Eagle was anciently used in the East for Falconry; but this practice is now laid aside. He is too heavy to be carried on the hand: nor is he ever rendered so tame or so gentle, as to remove all suspicions of danger. His bill and claws are crooked and formidable: his figure corresponds with his instinct: his body is robust; his legs and wings are strong; his flesh is hard; his bones are firm; his feathers stiff; his attitude bold and erect; his movements quick; his flight rapid. He rises higher in the air than any other of the winged race; and hence he was termed by the ancients the *Celestial Bird*, and was regarded in their mythology as the messenger of Jupiter. He can distinguish objects at an immense distance; but his power of smell is inferior to that of the Vulture. By means of his exquisite sight, he pursues his prey; and, when he has seized it he checks his flight, and places it upon the ground to examine its weight, before he carries it off. Though his wings are vigorous; yet, his legs being stiff, it is with difficulty he can rise, especially if he be loaded. He is able to bear away Geese and Cranes: he also carries off Hares, young Lambs, and Kids. When he attacks Fawns or Calves, he instantly gluts himself with their blood and flesh, and afterwards transports their mangled carcasses to his nest, or *aery*."

Formed for war, these Birds are solitary and unsociable. They are also fierce, but not implacable; and, though not easily tamed, are capable of great docility. They will not, however, bear the least harsh usage without endevoring to resent it. A gentleman who lived in the south of Scotland, had, not many years ago, a tame Eagle. This Bird the keeper one day injudiciously lashed with a horsewhip. About a week afterwards the man chanced to stoop within reach

* The voice of the Lion and Eagle, notwithstanding this assertion of M. de Buffon, will not bear comparison. The one is a deep and dreadful bass; and the other a piercing treble, altogether destitute of majesty.

of its chain; when, recollecting the insult, the enraged animal flew in his face with so much fury and violence, that he was terribly wounded, but was driven so far back by the blow, as to be out of further danger. The screams of the Eagle alarmed the family; who found the man lying at some distance, covered with blood, and equally stunned with the fright and the fall. The Bird was still pacing and screaming in a manner not less threatening than majestic; and, shortly, afterwards, he broke his chain and escaped.

The Golden Eagles build their nests on elevated rocks, ruinous and solitary castles and towers, and other sequestered places. The nest is quite flat; and not hollow, like the nests of other birds. The male and female commonly place it between two rocks, in a dry and inaccessible situation. The same nest, it is said, serves the Eagle during life. Its form resembles that of a floor. Its basis consists of sticks about five or six feet in length, which are supported at each end; and these are covered with several layers of rushes and heath.

An Eagle's nest which was, some years ago, found in the Peak of Derbyshire, was made of great sticks, and one end of it rested on the edge of a rock, the other on a birch-tree. Upon these was a layer of rushes, over them a layer of heath, and on the heath rushes again; upon which lay one young Eagle, and an addle egg; and by them a Lamb, a Hare, and three heath pouts. The nest was about two yards square, and had no hollow in it.

The females never lay more than two or three eggs. These they hatch in thirty days. They feed their young ones with the slain carcasses of such small animals as come in their way; and, though they are at all times formidable, they are particularly so while bringing up their offspring.

It is said that once during a summer of famine, a countryman got a comfortable subsistence for his family out of an Eagle's nest. He protracted the assiduity of the old birds beyond their usual time, by clipping the wings, and thus retarding the flight, of their young ones; and tying them so as to increase their cries, which are always found to increase the dispatch of the parents in supplying their wants. It was fortunate for him that the old ones did not detect the plunderer, otherwise their resentment might have proved fatal. A peasant, not many years ago, resolved to rob an Eagle's nest, which he knew to be built on a small island in the beautiful lake of Killarney. He stripped himself for this purpose, and swam over when the old birds were gone: but, in his return, while yet up to the chin in water, the parents, coming home, and missing their offspring, quickly fell on the plunderer, and killed him on the spot.

Several instances have been recorded of children being seized and carried off to their nests by Eagles. In the year 1737, in the parish of Norderhougs, in Norway, a boy somewhat more than two years old, was running from the house to his parents, who were at work in the fields at no great distance, when an Eagle pounced upon and flew off with him, in their sight. It was with bitterest anguish they beheld their child dragged away, but all their screams and efforts to prevent it were in vain. Anderson, in his History of Iceland, says, that in that

island children of four or five years of age have been sometimes taken away by Eagles; and Ray relates, that in one of the Orkneys, a child of a year old was seized in the talons of an Eagle, and carried above four miles to its nest. The mother, knowing the place, pursued the bird, found her child in the nest, and took it away unhurt.

The form of the Golden Eagle is extremely muscular; but their chief strength lies in their beak, their talons, and their wings. There is scarcely any quadruped a match for them; as they are capable of giving the most terrible annoyance, without much danger to themselves One flap of their wing has been known to strike a man dead.

These birds are remarkable for longevity, and for their power of sustaining abstinence from food for a great length of time. One that died at Vienna, had been in confinement above a hundred years; and one that was in the possession of a gentleman of Conway, in Caernarvonshire was, from the neglect of his servants, kept for three weeks without any sustenance.

THE OSPREY, OR FISHING EAGLE.

The length, from the point of the beak to the end of the tail, is about two feet, and the expanded wings measure somewhat more than five feet. The wings when closed, reach beyond the end of the tail. The head is small; and is black or brown, variegated with white at the top. The upper parts of the body, and the whole of the tail, are brown, and the belly is white. It is a singular circumstance in this bird, that the outer toe turns easily backward, so as on occasion to have the toes two forward and two backward, and it has a much larger claw than the inner one. This and the peculiar roughness of the whole foot underneath, are well adapted for the securing of its prey.

OSPREY.

The Osprey frequents large rivers, lakes, and the sea-shore both of Europe and America. In the latter country, particularly, it often affords amusement to strangers. During the spring and summer,

months, this bird is frequently seen hovering over the rivers, or resting on the wing for several minutes at a time, without the least visible change of place. It then suddenly darts down, and plunges into the water, whence it seldom rises again without a fish in its talons. When it rises into the air, it immediately shakes off the water, which it throws around like a mist, and pursues its way towards the woods. The

OSPREY ROBBED OF ITS PREY BY THE EAGLE.

Bald Eagle, which, on these occasions, is generally upon the watch, instantly pursues, and, if it can overtake, endeavors to soar above it. The Osprey, solicitous for its own safety, drops the fish in alarm; the Eagle immediately pounces at this prey, and never fails to catch it before it reaches the water, leaving the hawk to begin his work afresh.

It is somewhat remarkable, that whenever the Osprey catches a fish, it always makes a loud screaming noise; which the Eagle, if within hearing, never fails to take as a signal. Sometimes it happens, that, if the Osprey be tolerably large and strong, it will contend with the Eagle for its rightful property; and, though generally conquered in the end, a contest of this sort has been sustained for upwards of half an hour.

The Osprey usually builds its nest on the ground, among reeds; and lays three or four white eggs, rather smaller than those of a Hen. Colonel Montague states, that he once saw the nest of this Bird on the top of a chimney of a ruin, in an island of Loch Lomond in Scotland. It was large and flat, formed of sticks laid across, and lined with flags; and it rested on the sides of the chimney

THE BLACK, OR COMMON EAGLE.

Its length is two feet ten inches; the bill is horn-colored, and the cere reddish. The general color of the plumage is blackish; and the

COMMON EAGLE.

head and upper parts of the neck, are mixed with yellow. The lower half of the tail is white, with blackish spots; the other half blackish; The legs are covered with dirty white feathers; the toes are yellow, and the claws black.

The most perpendicular and inaccessible rocks are generally selected as the habitation of the Black Eagles; and from these they occasionally descend into the plains to feed. As these Birds are sometimes very destructive amongst Lambs and other small animals, it is not unusual to lay snares and traps in order to kill them; but their sagacity is such, that they are seldom caught. They attack and devour indiscriminately every kind of Bird; and, when hard pressed by hunger, will feed on carrion.

Their aeries are usually formed amongst the branches of the highest trees; and one of them, which was seen in the mountains of Auvergne, is described to have measured more than five superficial feet.

An Eagle of this species, which was in the possession of the Abbé Spallanzani, was so powerful, as to be able to kill Dogs that were much larger than itself. When the Abbé forced one of these animals

into the apartment where the Eagle was kept, the Bird immediately ruffled the feathers on its head and neck, cast a dreadful look at its victim, and, taking a short flight, immediately alighted on his back. It held the neck firmly with one foot, by which the Dog was prevented from turning his head to bite, and with the other grasped one of his flanks, at the same time driving its talons into the body; and in this attitude it continued, till the Dog expired with fruitless outcries and efforts. The beak, which had been hitherto unemployed, was now used for making a small hole in the skin: this was gradually enlarged; and from this, the Bird began to tear away and devour the flesh, and went on till he was satisfied.

Notwithstanding its ferocity in attacking animals, this Eagle never gave any molestation to man. Its owner, who constantly fed it, could safely enter the apartment where the bird was kept, and could behold these assaults without dread or apprehension; nor was the Eagle prevented from attacking the living prey he offered to it, or rendered shy by his presence. In general, when it had flesh sufficient, it made only one meal a day. The Abbé found, by weighing what it ate, that thirty ounces of flesh, one day with another, were fully sufficient for it.

These birds are found in all quarters of the world; and in hot as well as cold climates. Poiret speaks of having encountered them in the plains of Barbary. They are also very common in several parts of Europe, in Persia, and Arabia; and also in most of the mountainous districts of America.

THE WHITE-HEADED EAGLE, OR BALD EAGLE.

WHITE-HEADED EAGLE.

The White-headed Eagle, or Bald Eagle, as it is called by Wilson, inhabits most parts of America, and especially frequents the cataract of Niagara. It is very accommodating in its appetite, and preys indiscriminately on Lambs, Pigs, Swans and the Fish which, as related above, it takes away from the unfortunate Osprey. Sometimes it can take Fish honorably for itself in shallow water, by wading

as far as it can and snatching up the fish with its beak. Audubon gives a splendid description of the chase of a swan by an Eagle, but want of space prevents insertion.

Like the Golden Eagle, this bird lives constantly with its mate, and hunts in company. It lays from two to four eggs, of a dull white color, in a huge nest placed in a tall tree.

The claws of this bird are grooved beneath, and the hind claw is the longest. The feet are half-feathered, and the fourth primary feather of the wing is the longest. When full grown, the general color of the bird is a deep, brownish black, but its head, neck, tail, and upper tail-coverts are white.

THE COMMON BUZZARD.

The Buzzard is about twenty inches in length, and four feet and a half in breadth. Its bill is lead-colored. The upper parts of the body are dusky: and the lower pale, varied with brown. The wings and tail are marked with bars of a darker hue. The tail is grayish beneath nd tipped with dusky white. The legs are yellowish, and the claws black.

This well-known bird is of a sedentary and indolent disposition; it will frequently continue perched for many hours successively upon a tree or eminence, from which it darts upon such prey as come within its reach. It feeds on birds, small quadrupeds, reptiles and insects. Though possessed of strength, agility, and weapons to defend itself, it is cowardly, inactive, and slothful. It will fly from a Sparrow-hawk; and, when overtaken, will suffer itself to be beaten, and even brought to the ground, without resistance.

There are few birds of the hawk species more common in this country, than the buzzard. It breeds in large woods; and usually builds in an old crow's nest, which it enlarges, and lines with wool and other soft materials. It feeds and tends its offspring, which are generally two or three in number, with great assiduity. Mr. Ray affirms, that if the female be killed during the time of incubation, the male Buzzard will take the charge of the young ones, and will patiently rear them till they are able to provide for themselves.

The following anecdote, which was related by M. Fontaine, curé de St. Pierre de Belesme, to M. de Buffon, will show that the Buzzard may be so far tamed, as to be rendered a faithful domestic. "In 1763 (says this gentleman,) a Buzzard was brought to me that had been taken in a snare. It was at first wild and ferocious. I undertook to tame it; and I succeeded, by leaving it to fast, and constraining it to come and eat out of my hand. By pursuing this plan, I brought it to be very familiar; and, after having shut it up about six weeks, I began to allow it a little liberty, taking the precaution, however, to tie both pinions of its wings. In this condition it walked out into my garden, and returned when I called it to feed. After some time, when I judged

that I could trust to its fidelity, I removed the ligatures; and fastened a small bell, an inch and a half in diameter, above its talon, and also attached to its breast a bit of copper, having my name engraved on it. I then gave it entire liberty, which it soon abused; for it took wing, and flew as far as the forest of Belesme. I gave it up for lost; but four hours afterwards, I saw it rush into my hall, pursued by five other buzzards, which had constrained it to seek again its asylum.

"After this adventure, it preserved its fidelity to me, coming every night to sleep on my window. It soon became familiar; attended constantly at dinner; sat on a corner of the table, and often caressed me with its head and bill, emitting a weak, sharp cry, which, however, it sometimes softened. It is true that I alone had this privilege. It one day followed me when I was on horseback, more than two leagues, flying above my head.

"It had an aversion both to Dogs and Cats; nor was it in the least afraid of them: it had often tough battles with them, but always came off victorious. I had four strong Cats, which I collected into my garden with my Buzzard. I threw to them a bit of raw flesh: the nimblest Cat seized it; the rest pursued, but the Bird darted upon her, bit her ears with his bill, and squeezed her sides with his talons so forcibly, that the Cat was obliged to relinquish her prize. Often another Cat snatched it the instant it dropped; but she suffered the same treatment, till the Buzzard got entire possession of the plunder. He was so dexterous in his defence, that, when he perceived himself assailed at once by the four Cats, he took wing, and uttered a cry of exultation. At last, the Cats, chagrined by their repeated disappointment, would no longer contend with him.

"This Buzzard had a singular antipathy: he would not suffer a red cap to remain on the head of any of the peasants; and so alert was he in whipping it off, that they found their heads bare without knowing what was become of their caps. He also snatched away wigs, without doing any injury; and he carried these caps and wigs to the tallest tree in a neighboring park, which was the ordinary deposit of his booty.

"He would suffer no other Birds of prey to enter his domain: he attacked them boldly, and put them to flight. He did no mischief in my court-yard; and the poultry, which at first dreaded him, grew insensibly reconciled to him. The Chickens and Ducklings received not the least harsh usage; and yet he bathed among the latter. But, what is singular, he was not gentle to my neighbors' poultry; and I was often obliged to publish that I would pay for the damages that he might occasion. However, he was frequently fired at; and, at different times, received fifteen musket-shots without suffering any fracture. But once, early in the morning, hovering over the skirts of a forest, he dared to attack a Fox; and the keeper, seeing him on the shoulders of the Fox, fired two shots at him: the Fox was killed, and the Buzzard had his wing broken; notwithstanding this fracture, he escaped from the keeper, and was lost for seven days. This man having discovered, from the noise of the bell, that it was my Bird he had shot, came the next morning to inform me. I sent to search near

the spot; but the Bird could not be found, nor did it return till seven days afterwards. I had been used to call him every evening with a whistle: this he did not answer for six days; but on the seventh I heard a feeble cry at a distance, which I judged to be that of my Buzzard: I repeated the whistle a second time, and heard the same cry. I went to the place from which the sound came; and, at last, found my poor Buzzard with his wing broken. He had travelled more than half a league on foot to regain his asylum, from which he was then distant about a hundred and twenty paces. Though he was extremely reduced, he gave me many caresses. It was six weeks before he was recruited, and his wounds were healed; after which he began to fly as before, and to follow his old habits: these he continued for about a year, and then disappeared for ever."

THE KITE, GLEDE, OR GLED.

The Kite, Glede, or Gled, is not uncommon in England, and is spread over Europe, Asia, and Northern Africa. It is especially hated by the farmer for its depredations on his poultry, and its appearance is the signal for a general outcry among the terrified poultry, who perceive it long before the keenest-eyed man can distinguish it from a casual spot in the distant sky. The sportsman also detests it for the havoc which it makes among the game,—possibly the Kite hates the sportsman for the same reason.

KITE.

It builds in tall trees, and lays three eggs, white, spotted with reddish brown at the larger end. Its length is rather more than two feet; the fourth primary feather is the longest, the first and seventh nearly equal.

THE GENTIL FALCON.

The Gentil Falcon measures about two feet in length. Its beak is of a red color, with a yellow cere. The head and back part of the neck are rusty, with oblong black spots. The back and wings are brown, and each feather of the wings is tipped with rust-color. The quills are dusky; the outer webs barred with black, and the lower parts of the inner webs are marked with white. The wings reach to the middle of the tail, which is banded with black and ash-color, and tipped with white. The legs are short and yellow, and the claws black.

When, in ancient times, the sport of falconry was in high repute, this was one of the species of Falcons which was employed. It is a spirited and dauntless bird; and in a wild state is a native of the rocks of Caernarvonshire, and the Highlands of Scotland.

In Syria there is a small variety of the Gentil Falcon, which the in-

habitants denominate Shaheen; and which is of so fierce and courageous a disposition, that it will attack any Bird, however large or powerful, which presents itself. "Were there not (says Dr. Russel, in his account of Aleppo) several gentlemen now in England, to bear witness to the fact, I should hardly venture to assert that, with this bird, which is about the size of a Pigeon, the inhabitants sometimes take large Eagles. This Hawk, in former times, was taught to seize the Eagle under the pinion, and thus depriving him of the use of one wing, both birds fell to the ground together; but I am informed that the present mode is to teach the Hawk to fix on the back, between the wings, which has the same effect, only that, the bird tumbling down more slowly, the falconer has more time to come to his Hawk's assistance; but in either case, if he be not very expeditious, the Falcon is inevitably destroyed.

"I never saw the Shaheen fly at Eagles, that sport having been disused before my time; but I have often seen him take Herons and Storks. The Hawk, when thrown off, flies for some time in a horizontal line, not six feet from the ground, then mounting perpendicularly, with astonishing swiftness, he seizes his prey under the wing, and both together come tumbling to the ground. If the falconer, however, be not expeditious, the game soon disengages itself and escapes."

THE GOSHAWK.

The Goshawk is found plentifully in most of the wooded districts of Europe, but is comparatively rare in the British Isles. It seldom breeds south of Scotland, but its nest is not unfrequently found in that country, built upon lofty trees, principally firs, and containing three eggs of a bluish white color with reddish brown marks. When in pursuit of prey, it strikes its victim to the ground by the force with which it dashes through the air. Should the terrified quarry hide itself, the Goshawk takes up its station on some elevated spot, and there patiently waits until the game takes wing. Its principal food consists of Hares, Squirrels, Pheasants, and other large Birds, which its great strength enables it to destroy. Its length is about two feet; the fourth primary feather is the longest.

THE HEN HARRIER.

The Hen Harrier is about seventeen inches long, and three feet wide. Its bill is black, and cere yellow. The upper parts of its body are of a bluish gray: and the back of the head, the breast, belly, and thighs are white; the two former marked with dusky streaks. The two middle feathers of the tail are gray, and the outer webs of the others are of the same color; but the inner ones are marked with alternate bars of white and rust-color. The legs are long, slender, and yellow; and the claws black.

It is about forests, heaths, and other retired places, especially in the neighborhood of marshy grounds, where they destroy vast numbers of Snipes, that these birds are usually seen. They sail with great regularity all over a piece of marsh, till they discover their prey, when they immediately pounce upon and seize it.

A gentleman who was shooting in Hampshire, by chance sprung a Pheasant in a wheat-stubble, and shot at it: notwithstanding the report of the gun, it was pursued by a Hen Harrier, but escaped into a covert. He then sprung a second, and a third, in the same field, and these likewise got away; the Hawk hovering round him all the while he was beating the field, conscious, no doubt, of the game that lurked in the stubble. Hence we may conclude, that this bird of prey was rendered daring and bold by hunger, and that Hawks are not always in a condition to strike their game. We may further observe, that they cannot pounce on their quarry when it is on the ground, where it might be able to make a stout resistance; since so large a fowl as a Pheasant could not but be visible to the piercing eye of a Hawk, when hovering over it. Hence that propensity in game to cowering and squatting till they are almost trodden on; which, doubtless, was intended by Providence, as a mode of security, though it has long been rendered destructive by the invention of nets and guns.

HEN HARRIER.

A Hen Harrier that was shot some years ago near London, was first observed dodging round the lower parts of some old trees, and then seeming to strike against the trunks of them with its beak or talons, but still continuing on wing. The cause of this singular conduct could not even be conjectured, till after it was killed; when on opening its stomach, nearly twenty small brown Lizards were found there, which it had artfully seized, by coming suddenly upon them. They were each bitten or torn into two or three pieces.

These destructive birds may be caught by means of a trap, baited with a stuffed Rabbit's skin, and covered nicely over with moss. They breed annually on the Cheviot-hills; and from a Hen Harrier and Ring Tail (*Falco pygargus*) having been shot on the same nest, it appears that these are not two distinct species, however different they may be in appearance, but that they are in reality the male and female of the same.

The nest of the Hen Harrier is usually formed near the ground, amongst furze or in thickets. It is constructed of sticks rudely put together, and is nearly flat. The eggs are about four in number, without spots, and of a dirty white color.

THE SPARROW-HAWK.

The male Sparrow-nawk is about twelve, and the female, fifteen, inches in length. The exterior feathers of the upper parts of the latter are brown, with dusky edges; and on the back of the head there are some whitish spots. The under parts are yellowish white, waved with light brown. The chin is streaked with perpendicular lines of brown. The tail is barred with dark brown, and is white at the end. The legs are yellow, and the claws black. The male is somewhat different. The upper part of its breast is of a dark lead-color; the bars on this part are more numerous, and the under parts are altogether darker. In both sexes the bill is blue, and the cere yellow.

SPARROW HAWK.

The Sparrow-hawk is a bold bird. It is the dread of the farm-yard, for, at times, it makes great havoc among young poultry; and it commits its depradations in the most daring manner, even in the presence of mankind. In winter it often makes havoc among the flocks of Buntings and Finches.

Few of the rapacious birds are so docile and obedient as this. When properly trained it is capable of great attachment; and it is so far susceptible of education, that it may be taught to pursue Partridges and other game. It will also pounce upon Pigeons when separated from their companions.

The editor of a respectable publication, entitled the Beauties of Natural History, states, that when he was a boy he had a Sparrow-hawk that used to accompany him through the fields, catch its game, devour it at leisure, and, after all, find him out wherever he went; nor, after the first or second adventure of this kind, was he ever afraid of losing the bird. A peasant, however, to his great mortification, one day shot it for having made too free with some of his poultry. It was about as large as a Wood-pigeon; and this gentleman says he has seen it fly at a Turkey-cock; and, when beaten, return to the charge with undaunted intrepidity: he had also known it to kill a fowl five or six times as big as itself.

The female builds her nest in hollow trees, on high rocks or lofty ruins; sometimes, however, she is contented with the old nest of a Crow. She generally lays four or five eggs.

THE SWALLOW-TAILED HAWK.

This beautiful Kite breeds and passes the summer in the warmer parts of the United States, and is also probably resident in all tropical and temperate America, migrating into the southern as well as the northern hemisphere. In the former, according to Viellot, it is found in Peru, and as far as Buenos Ayres; and though it is extremely rare to meet with this species as far as the latitude of forty degrees in the Atlantic states; yet tempted by the abundance of the fruitful valley of the Mississippi, individuals have been seen along that river as far as the Falls of St Anthony, in the forty-forth degree of north latitude. Indeed, according to Fleming, two stragglers have even found their devious way to the strange climate of Great Britain.

SWALLOW-TAILED HAWK.

THE GYR-FALCON.

The Gyr-falcon may be considered the type of the British Falconidæ. It is, however, extremely rare in England, those intended for hawking being principally brought from Iceland. On the rocky coasts of Norway and Iceland its eggs are laid. These birds are very courageous in defending their young. A pair of them attacked Dr. Richardson while he was climbing near their nest, flying in circles round him, and occasionally dashing at his face with loud screams. The entire length of the Gyr-falcon is twenty-three inches.

THE PEREGRINE FALCON.

The Peregrine Falcon, an inhabitant of most parts of Europe, Asia, and South America, was, in the palmy days of hawking, one of the favorite Falcons chosen for that sport. Its strength and swiftness are very great, enabling it to strike down its prey with great ease; indeed, it has been known to disable five partridges in succession. From its successful pursuit of Ducks the Americans call it the Duck Hawk.

There is a peculiarity in the method of attack which this bird employs when pursuing small game. Instead of merely dashing at its prey, and grasping it with its claws, the Peregrine Falcon strikes its victim with its breast, and actually stuns it with the violence of the blow before seizing it with its claws. The boldness of the Peregrine Falcon is so great that it was generally employed to take the formidable Heron. After the Heron had been roused from his contemplations by some marsh or river, the Falcon, who had previously been held hooded on its master's hand, was loosed from its bonds and cast off. A contest then generally took place between the Heron and the Falcon, each striving to ascend above the other. In this contest the Falcon was always victorious, and after it had attained a certain altitude, it swept, or "stooped," as the phrase was, upon the Heron. When the Falcon had closed with its prey, they both came to the ground together, and the sportsman's business was to reach

GOING A HAWKING.

the place of conflict as soon as possible, and assist the Falcon in vanquishing its prey. Sometimes, however, the wary Heron contrived to receive its enemy on the point of its sharp beak, and transfixed it by its own impetus.

It changes the color of its plumage several times before it arrives at full maturity, and in the days of falconry was known by different names, such as "Hagard" when wild, "Eyass," "Red Falcon" when young, "Tiercel" or "Tassel-gentle" when a full-grown male; a term forcibly recalling the words of Juliet, "Oh for a Falconer's voice to lure this *Tassel-gentle* back again!"

It builds on ledges of rocks, laying four eggs of a reddish brown color. Its length is from fifteen to eighteen inches.

DEATH OF THE HERON.

THE CHAUNTING FALCON.

This lately-discovered species is about the size of the Common Falcon. Its plumage is, in general, of a pale lead-color, with the top of the head and the scapulars inclining to brown. The under parts of the breast are of a pearly gray, crossed with numerous gray stripes. The quills are black. The tail is wedge-shaped, the outer feathers one-third shorter than the middle ones, and the tip white. The bill and claws are black, and the cere and legs orange.

During the breeding season the male of this species is remarkable

for its song, which it utters every morning and evening, and like the Nightingale, not uncommonly all the night through. It sings in a loud tone for more than a minute, and after an interval begins anew. During its song it is so regardless of its own safety, that any one may approach very near to it: but at other times it is suspicious, and takes flight on the slightest alarm. Should the male be killed, the female also may be shot without difficulty: for her attachment to him is such, that she continues flying round with the most plaintive voice; and, often passing within a few yards of the gunner, it is an easy matter to kill her. But, if the female happen to be shot first, the affection of her mate does not prove so romantic; for, retiring to the top of some distant tree, he is not easily approached: he does not, however, cease to sing, but becomes so wary as, on the least alarm, to fly entirely away from that neighborhood.

The female forms her nest between the forks of trees, or in bushy groves. She lays four white, round eggs. This Falcon, for its size, is a very destructive species. It preys on Partridges, Hares, Quails, Moles, Rats, and other small animals.

It is a native of Caffraria, in the South of Africa, and of some of the adjacent countries.

OF THE OWLS IN GENERAL.

In this tribe as in the last, the bill is hooked, but it is not furnished with a cere. The nostrils are oblong, and covered with bristly feathers. The head, ears and eyes, are very large; the tongue is cleft.

Much in the same manner as Moths differ from Butterflies, do these birds differ from the Falcons; the Owls being nocturnal, and pursuing their prey only in the night; and the Falcons flying altogether in the day-time. They feed principally on small birds and quadrupeds, and on nocturnal insects: the exuviæ and bones of which (as in the Falcons) are always discharged at the mouth, in the form of small pellets. Their eyes are so constructed, that they are able to see much more distinctly in the dusk of the evening than in the broad glare of sunshine. All animals, by the contraction and dilatation of the eye, have, in some degree, the power of shutting out or admitting light, as their necessities require: but in the Owls this property is observed in singular

perfection; and, in addition to this, there is an irradiation on the back of the eye, which greatly aids their vision in the obscure places that they frequent.

The head is round, and formed somewhat like that of a Cat. About the eyes, the feathers are ranged as if proceeding from a common centre in the middle of the eye; and they extend in a circle to some distance. The legs are clad with down or feathers, even to the origin of the claws, which are very sharp and hooked. Three of the toes can occasionally be turned back, to suit either for perching or climbing, as occasion may require.

In winter Owls retire into holes in towers and old walls, and pass that season in sleep. The number of species is about *fifty;* of which twenty are furnished with long feathers, surrounding the openings of the ears, and called, from the appearance they give to the animals, *horns.* In their general modes of life, the Owls may be considered as the Cats of the feathered species.

THE GREAT HORNED, OR EAGLE OWL.

The body of this Owl is of a tawny red color, marked with lines and spots, elegantly varied, of black, brown, ash, and rust color. The wings are long, and the tail is short, and marked with transverse dusky streaks. The legs are thick, of a brick-dust red color, and (except in one variety) feathered to the claws, which are large, hooked, and dusky.

Although Owls are superstitiously considered by the inhabitants of most countries as birds of ill-omen; yet the Athenians alone, among the ancients, seem to have been free from this popular prejudice, and to have regarded them rather with veneration than abhorrence. The present species, which is common in many parts of Greece, was even considered a favorite bird of Minerva; and at Athens the inhabitants had a proverb, "to send Owls to Athens," which was precisely equivalent to one used by the English, "to send coals to Newcastle."

This Owl is equal in size to some of the Eagles: it inhabits inaccesible rocks and desert places, in most parts of Europe, Asia, and America; and is sometimes, though rarely found in this country. Its eyes are so constructed, that it is able to see much better during the day-time than almost any other of the tribe. It has been frequently observed preying, on its game of birds and small quadrupeds, in full day-light.

M. Cronstedt has recorded a pleasing instance of the attachment of these birds to their offspring. This gentleman resided several years at a farm in Sudermania, near a steep mountain, on the summit of which two Eagle Owls had their nest. One day in the month of July, a young Owl having quitted the nest was seized by some of his servants.

This bird, after it was caught was shut up in a large hen-coop; and the next morning M. Cronstedt found a young Partridge lying dead before the door of the coop. He immediately concluded that this provision had been brought thither by the parent birds; which he supposed had been making search in the night-time for their lost young-one and had been led to the place of its confinement by its cry. This proved to have been the case, by the same mark of attention being repeated for fourteen successive nights. The game which the old ones carried to it consisted principally of young Partridges, for the most part newly killed, but sometimes a little spoiled. One day a moor-fowl was brought, so fresh, that it was still warm under the wings. A putrid Lamb was found, at another time. M. Cronstedt and his servant watched at a window several nights, that they might observe, if possible, when this supply was deposited. Their plan did not succeed: but it appeared that the Owls, which are very sharp-sighted, had discovered the moment when the window was not watched; as food was found to have been deposited before the coop, one night when this had been the case. In the month of August the parents discontinued this attention; but at that period all birds of prey abandon their offspring to their own exertions. From this instance, some idea may be formed of the great quantity of game that must be destroyed by a pair of these Owls, during the time they are employed in rearing their young.

EAGLE OWL.

It is said that sometimes, when falconers wish to lure the Kite for the purpose of training the Falcon, they disfigure an Owl of this species, by fastening to it the tail of a Fox. The animal, rendered thus grotesque is let loose; and he sails slowly along, flying, as he usually does, very

low. The poor Kite, either curious to observe so strange an animal, or, perhaps inquisitive to know whether it may not be eligible prey, flies after it. He approaches near, and hovers immediately over it; when the falconer, loosing a strong-winged Falcon against him, seizes him at once, and drags him into captivity.

THE WHITE, OR SCREECH OWL.

The plumage of these Owls is very elegant. A circle of soft white feathers surrounds each of the eyes. All the upper parts of the body are of a fine pale yellow color, variegated with white spots; and the under parts are entirely white. The legs are feathered down to the claws.

Incapable of seeing their prey, or even of avoiding danger sufficiently, in the full blaze of day, these Birds keep concealed, during this time, in some secure retreat suited to their gloomy habits, and there continue in solitude and silence. If they venture abroad, every thing dazzles and distracts them. Legions of Birds flock around them, and single them out as objects of derision and contempt. The Black-bird, the Thrush, the Jay, the Bunting, and the Red-breast, all come in a crowd, and employ their little arts of insult and abuse. The smallest, the feeblest, and the most contemptible enemies of this bewildered creature are then the foremost to injure and torment him. They increase their cries and turbulence around him, flap him with their wings, and, like cowards, are ready to exhibit their courage when they are sensible that the danger is but small. The unfortunate wanderer, not knowing where he is, whom to attack, or whither to fly, patiently sits and suffers all their indignities with the utmost stupidity. An aversion which the smaller birds bear to the Owl, with a temporary assurance of their own security, urge them to pursue him, whilst they encourage each other, by their mutual cries, to lend assistance in the general cause. Bird-catchers, aware of this singular propensity, having first limed several of the outer branches of a hedge, hide them-

EAR OF AN OWL.

selves near it, and imitate the cry of an Owl; when instantly all the small birds who hear it flock to the place, in hopes of their accustomed game; but, instead of meeting a stupid and dazzled antagonist, they find themselves ensnared by an artful and unrelenting foe.

This want of sight is compensated by their peculiar quickness of hearing; for the latter sense is much more acute in the Owls than in most other birds.

The White Owl generally quits its hiding place about the time of twilight, and takes a regular circuit round the fields, skimming along the ground in search of its food, which consists chiefly of Field-mice and small birds. Like the rest of its tribe, it afterwards emits the bones, feathers, hair, and other indigestible parts, at the mouth, in the form of small pellets. A gentleman, on digging up a decayed pollard-ash that had been frequented by Owls for many generations, found at the bottom many bushels of this kind of refuse. Sometimes these Owls, when they have satisfied their appetite, will, like Dogs, hide the remainder of their meat. Mr. Stackhouse, of Pendarvis in Cornwall, informed me, that in his pleasure-grounds he often found Shrew-mice lying in the gravel-walk, dead, but with no external wound. He conjectured that they had been struck by the Owls, in mistake for Field-mice; and that these birds, afterwards finding their error, in having destroyed animals to which they have a natural antipathy, had left them untouched. This gentleman discovered, by accident, another of the antipathies of White Owls. A Pig having been newly killed, he offered a tame Owl a bit of the liver; but nothing, he says, could exceed the contemptuous air with which the bird spurned it from him.

The Mogul and Kalmuck Tartars pay almost divine honors to the White Owl; for they attribute to it the preservation of Jenghis Khan, the founder of their empire. That prince, with a small army, happened to be surprised and put to flight by his enemies. Compelled to seek concealment in a coppice, an Owl settled on the bush under which he was hidden. This circumstance induced his pursuers not to search there, since they supposed it impossible that that bird would perch where any man was concealed. The Prince escaped; and thenceforth his countrymen held the White Owl sacred, and every one wore a plume of feathers of this bird on his head. To this day, the Kalmucks continue the custom on all their great festivals; and some of the tribes have an idol, in the form of an Owl, to which they fasten the real legs of the Bird.

The Screech Owl is well known in all parts of England, from the circumstance of its frequenting churches, old houses, and uninhabited buildings; where it continues during the day, and whence, in the evening, it ranges abroad in quest of food. It received its name from the singular cry which it emits during its flight. In its repose it makes a blowing kind of noise, like the snoring of a man. The female forms no nest; but deposits her eggs, generally five or six in number, in the holes of decayed walls, or under the eaves of old buildings. While the young-ones are in the nest, the male and female alternately sally out in quest of food. They are seldom absent more than five minutes,

when they return with the prey in their claws; but, as it is necessary to shift it from these into their bill, for the purpose of feeding their young-ones, they always alight so do that before they enter the nest. As the young Owls continue for a great length of time in the nest, and are fed even long after they are able to fly, the old birds have to supply them with many hundreds of Mice; on this account they are generally considered useful animals in the destruction of vermin of this description.

THE BROWN OWL.

The Brown Owl measures somewhat more than a foot in length; and is spotted with black on the head, wings, and back. Its breast is of a pale ash-color, with dusky, jagged, longitudinal streaks; and the circle round the eyes is ash-colored, spotted with brown.

BROWN OWL.

Few of the Owls are more rapacious than these. They reside in woods during the day; but at the approach of evening, when many animals, such as Hares, Rabbits, and Partridges, come out to feed they begin to be clamorous and active; they destroy such multitudes of small animals, as, on calculation, would appear astonishing. In the dusk of the evening, the Brown Owls approach the farmers' dwellings; and frequently enter the Pigeon-houses, where they sometimes commit dreadful ravages. They also kill great numbers of Mice, and skin them with as much dexterity as a cook-maid does a Rabbit. They seize their prey with great ferocity, and, always beginning at the head, tear it in pieces with much violence. Were they to appear abroad at any time but in the night, when all the poultry are gone to roost, the havoc they would commit in the farm-yard would be prodigious. They do not devour every part of the animals they destroy; the hinder parts they generally leave untouched.

On examining a nest of these Owls that had in it two young ones, several pieces of Rabbits, Leverets, and other small animals, were found. The hen and one of the young ones were taken away; the other was left to entice the cock, which was absent when the nest was discovered. On the following morning there were found in the nest three young Rabbits, that had been brought to this young-one by the cock during

the night. These birds are occasionally very bold and furious in defence of their young. A carpenter some years ago, passing through a field near Gloucester, was suddenly attacked by an Owl that had a nest in a tree near the path. It flew at his head; and the man struck at it with a tool that he had in his hand, but missed his blow. The enraged bird repeated the attack; and fastening her talons in his face, lacerated him in a most shocking manner.

When these animals hoot, they inflate their throats to the size of a hen's egg. They breed in hollow trees, or ruined buildings, laying commonly four whitish oval eggs. It is not difficult to catch them in traps; or they may easily be shot in the evenings, by any person who can allure them by imitating the squeaking of a Mouse.

THE GREAT VIRGINIAN HORNED OWL.

This species, so nearly related to the Great-Eared Owl of Europe, is met with occasionally from Hudson's Bay to Florida, and in Oregon; it exists even beyond the tropics, being very probably the same bird described by Marcgrave as inhabiting the forests of Brazil. All climates are alike to this Eagle of the night, the king of the nocturnal tribe of American birds. The aboriginal inhabitants of the country dread his boding howl, dedicating his effigies to their solemnities, and, as if he were their sacred bird of Minerva, forbid the mockery of his ominous, dismal, and almost supernatural cries. His favorite resort, in the dark and impenetrable swampy forests, where he dwells in chosen solitude

GREAT HORNED OWL.

secure from the approach of every enemy, agrees with the melancholy and sinister traits of his character. To the surrounding feathered race he is the Pluto of the gloomy wilderness, and would scarcely be known out of the dismal shades where he hides, but to his victims, were he as silent as he is solitary. Among the choking, loud, gutteral sounds which he sometimes utters, in the dead of night, and with a suddenness which always alarms, because of his noiseless approach, is the *'waugh hó! 'waugh hó!* which, Wilson remarks, was often uttered at the instant of sweeping down around his camp-fire. Many kinds of Owls are similarly dazzled and attracted by fire-lights, and occasionally finding no doubt, some offal or flesh, thrown out by those who encamp in the wilderness, they come round the nocturnal blaze with other motives than barely those of curiosity. The solitary travellers in these wilds, apparently scanning the sinister motive of his visits, pretend to interpret his address into "*'Who cooks for you all!*" and with a strong gutteral pronunciation of the final syllable, to all those who have heard this his common cry, the resemblance of sound is well hit, and instantly recalls the ghastly serenade of his nocturnal majesty in a manner which is not easily forgotten. The shorter cry, which we have mentioned, makes no inconsiderable approach to that uttered by the European brother of our species, as given by Buffon, namely, *'he-hoo, 'hoo-hoo, hoo-hoo*, &c. The Greeks called this transatlantic species *Byas*, either from its note, or from the resemblance this bore to the bellowing of an Ox. The Latin name *Bubo* has also reference to the same note of this nocturnal bird. According to Frisch, who kept one of these birds alive, its cries varied according to circumstances; when hungry it had a muling cry like *Páhŭ*. I have remarked the young, probably, of our species utter the same low, quailing cry, while yet daylight, as it sat on the low branch of a tree; the sound of both is, at times, also not unlike that made by the Hawks or diurnal birds of prey. Indeed in gloomy weather, I have seen our species on the alert, flying about many hours before dark, and uttering his call of *'ko ko, ko kŏ ho.* Their usual prey is young Rabbits, Squirrels, Rats, Mice, Quails, and small birds of various kinds, and when these resources fail or diminish they occasionally prowl pretty boldly around the farm-yard in quest of chickens, which they seize on the roost. Indeed the European Horned Owl frequently contends with the Buzzard for its prey, and generally comes off conqueror; blind and infuriate with hunger, one of these has been known to dart even upon a man, as if for conflict, and was killed in the encounter.

THE HAWK OWL.

This remarkable species, forming a connecting link with the preceding genus of the Hawks, is nearly confined to the Arctic wilds of both continents, being frequent in Siberia and the fur countries from Hudson's Bay to the Pacific. A few stragglers, now and then, at distant intervals and in the depths of winter, penetrate on the one side into the northern parts of the United States; and, on the other, they occasionally appear

in Germany, and more rarely in France. At Hudson's Bay they are observed by day flying high, and preying on the White Grouse and other birds, sometimes even attending the hunter like a Falcon, and boldly taking up the wounded game as it flutters on the ground. They are also said to feed on Mice and insects, and (according to Meyer) they nest upon trees, laying two white eggs. They are said to be constant attendants on the Ptarmigans in their spring migrations towards the north; and are observed to hover round the camp fires of the natives, in quest probably of any offal or rejected game.

HAWK OWL.

THE GOAT SUCKER.

The Accipitres, it will be remembered, possess strong hooked beaks and sharp curved claws. The foot and head of the Passeres are entirely different;—the beak being without the formidable curved tip, and the claws being of a quiet and peaceful character.

The first tribe of this order, the Fissirostres, are so called from the peculiar formation of their mouths, which appear as if they had been slit up from their ordinary termination to beyond the eyes, much resembling the mouth of a Frog. In the insect-eating Fissirostres this formation is admirably adapted for capturing their active prey, and in the Kingfishers it is equally adapted for securing the slippery inhabitants of the waters.

GOAT SUCKER.

The Caprimulgidæ are nocturnal in their habits, chasing their insect prey by night or at the dusk, when the Chaffers and the large Moths are on the wing. In order to prevent the escape of the insect when taken, the mouth is fringed with long stiff bristles, called "vibrissæ."

The name of Goat Sucker is derived from a silly notion that they suck Goats, a piece of credulity only equalled by the Hedgehog's supposed crime of sucking Cows, and the accusation against the Cat of sucking the breath of children. The genus Caprimulgus is furnished with a kind of comb on the middle claw of its foot, but for what purpose is not clearly ascertained. The power of wing in these birds is very great, and hardly surpassed by that of the Swallow, both birds obtaining their food in a similar manner.

The Night-Jar, or Goat Sucker, sometimes called the Fern Owl, is spread over Europe, and is tolerably common in England. It may be seen at the approach of evening, silently wheeling round the trees, capturing the nocturnal Moths and Beetles; then occasionally settling and uttering its jarring cry. When flying the bird sometimes makes its wings meet over its back, and brings them together with a smart snap. It arrives in England about the beginning of May, and leaves in December. It makes no nest, but lays two mottled eggs on the bare ground. Its length is ten inches. The Whip-poor-will and the Chuck-will's-widow both belong to this family.

CHUCK-WELL'S-WIDOW.

These two birds derive their singular names from their cry which is said closely to imitate the words that have been assigned to them as their names. Of course the English language must feel itself highly honored that an American bird should prefer the language of the "Britisher" to that of the Delaware or the Sioux. Both the birds fly by night or rather in the dusk of the evening, and like the Owl are much distressed by being forced to face a brilliant light. The Chuck-will's-widow is

WHIP-POOR-WILL.

partially migratory, and dwells in the more southern parts of America during the winter. Audubon relates that this bird applies its enormous mouth to rather an unexpected use, viz., that of removing its eggs if it finds that they have been disturbed. Of this curious circumstance he was an eye-witness. He saw the bird that first discovered that an intruder had touched the eggs wait for its mate and then saw each of them take an egg in its mouth and carry it off.

THE PAPUAN PODARGUS.

This species of the Night-Jar family is exclusively confined to Australia and the islands of the Indian Archipelago. It appears to be closely allied to a very rare species from Java, described by Dr. Horsfield, under the name of *Podargus Javanensis*. Even more confused by the light than is the common Goat Sucker, the members of the genus Podargus are completely nocturnal; they haunt the solitudes of the woods, and the sombre, but intermingled tints of their plumage screen them from observation. They issue forth only at night, but on the approach of day retire to their seclusion.

In connexion with our observations on the genus *Podargus*, we cannot omit a short notice of a most extraordinary bird, in many respects closely related to this genus, but which truly forms the type of a distinct generic group, under the title of *Steatornis*. We allude to the Guacharo (*Steatornis caripensis*, Humb.,) of which a memoir is published in the 'Nouvelles Annales du Muséum,' vol. III., part 4, by M. I' Herminier. The Guacharo is a native of the range of deep and gloomy caverns of Caripe, in the province of Cumana, where it was first discovered by MM. Humboldt and Bonpland in the year 1799 These caverns are formed in the sides of tremendous calcareous rocks, divided by a stupendous chasm, over which are thrown the famous bridges of Icononzo. "Numberless flights of nocturnal birds," says Humboldt "haunt the crevice, and which we were led at first to mistake for Bats of a gigantic size. Thousands of them are seen flying over the surface of the water. The Indians assured us that they are of the size of a fowl with a curved beak and an Owl's eye. They are called *Cacas*, and the uniform color of their plumage, which is bluish grey, leads me to think that they belong to the genus of *Caprimulgus*, the species of which are so various in the Cordilleras. It is impossible to catch them on account of the depth of the valley, and they can only be examined by throwing down rockets to illuminate the sides of the rock."

M. Depens, in his 'History of South America,' alludes to the same bird, of which he says, millions inhabit the cavern Called Guacharo, which is immense, and that their fat yields the "oil of Guacharo." Two Guacharo (for the bird takes the name of the cavern) were at last shot by M. Bonpland, by torchlight, and drawn by M. Humboldt: they were, however, lost by shipwreck, on their way to France, in 1801.

PIES.

In all birds of this order the bill is sharp-edged and convex on its upper surface. The legs are short, tolerably strong, and, in some species, formed for perching; (that is, with three toes forward and one backward;) in others formed for climbing, with two toes forward and two backward; and in others for walking, that is, without any back toe.

OF THE SHRIKES IN GENERAL.

In these birds the bill is strong, straight at the base and hooked or bent towards the end; and the upper mandible is notched near the tip. The base is not furnished with a cere. The tongue is jagged at the end. The outer toe is connected to the middle one as far as the first joint.

Although the Shrikes have been arranged by Linnæus amongst the rapacious birds, yet, with Mr. Pennant and Dr. Latham, I am inclined to place them amongst the *Pies*. If we retain the Shrike in the former order, on account of its chiefly feeding upon animal food, it would be difficult to dispose properly of the Kingfisher, the Woodpecker, and some other genera which do the same. If we dwell on the curvature of the bill, how will this agree with the Parrots, whose natural food is fruit? And as to the Shrikes living on other birds, whenever opportunity offers, several of the Crows and other tribes do the like. Their habits resemble, in a great measure, those of the Pies; as Linnæus has himself acknowledged: and although he has arranged them among the rapacious birds, he seems to consider them as holding a kind of middle place between the Pies and (on account of their smallness) the Passerine order. They seem, however, to stand, with greater propriety at the head of the Pies; forming there a connecting link between them and the rapacious birds.

They are inhabitants of every quarter of the world: and are found in all climates, except within the Arctic Circle.

THE GREAT OR CINEREOUS SHRIKE.

The Great Shrike or Butcher-bird, is a native both of Europe and America; and is, in general, about ten inches in length. Its bill is black, about an inch long, and hooked at the end. The upper parts of the plumage are of a pale ash-color; and the wings and tail are black, varied with white. The throat, breast, and belly, are of a dirty white; and the legs are black. The female differs very little in appearance from the male

The muscles which move the bill of this Shrike are very thick and strong; an apparatus that is peculiarly necessary to a species whose mode of killing and devouring its prey is very singular. The Shrike seizes the smaller birds by the throat, and thus strangles them; and it is probably for this reason that the Germans call him by a name signifying "*The suffocating Angel.*" When his prey is dead, he fixes it on some thorn; and, thus spitted, tears it to pieces with his bill. Even when confined in a cage, he will often treat his food in much the same manner, by sticking it against the wires before he devours it.

In spring and summer, he imitates the voices of other birds, by way of decoying them within his reach, that he may devour them; excepting this, his natural note is the same throughout all seasons. When kept in a cage, even where he seems perfectly contented, he is always mute.

Mr. Bell who travelled from Moscow, through Siberia to Pekin, says, that in Russia these birds are often kept tame in houses. He had one of them given to him, and taught it to perch on a sharpened stick, fixed in the wall of his apartment. Whenever a small bird was let loose in the room, the Shrike would immediately fly from his perch, and seize it by the throat in such a manner as almost in a moment to suffocate it. He would then carry it to his perch, and spit it on the sharpened end, drawing it on, carefully and forcibly, with his bill and claws. If several birds were given him, he would use them all, one after another, in a similar manner. These were so fixed, that they hung by the neck till he had leisure to devour them. This uncommon practice seems necessary to these birds, as an equivalent for the want of strength in their claws to tear their food to pieces. From this they derive their appellation of *Butcher-birds.*

In America, the Great Shrike has been observed to adopt an odd stratagem, for the apparent purpose of decoying its prey. A gentleman there, accidentally observing that several Grasshoppers were stuck upon the sharp thorny branches of the trees, inquired the cause of the phenomenon; and was informed that they were thus spitted by this bird. On further inquiry he was led to suppose, that this was an instinctive stratagem adopted by the Great Shrike, in order to decoy the smaller birds, which feed on insects, into a situation from which he could dart on and seize them. He is called in America *Nine-killer,* from the supposition that he sticks up nine Grasshoppers in succession. That the insects are placed there as food to tempt other birds, is said to appear from their being frequently left untouched for a considerable length of time.

The female forms her nest of heath and moss, and lines it with wool and gossamer. She lays six eggs; which are about as big as those of a Thrush, and of a dull olive-green color, spotted at the end with black. These birds are supposed to live to the age of five or six years; and they are much valued by husbandmen, on the supposition that they destroy Rats, Mice, and other vermin. They inhabit only mountainous wilds, among furze and unfrequented thickets, and are rarely found in the cultivated parts of our island.

THE TYRANT SHRIKE.

This bird is about the size of a Thrush. The bill is of a blackish-brown color, and furnished with bristles at the base. The upper parts of the plumage are of a lead-color. The under parts are white, and the breast inclines to ash-color. The tail is brown, and the legs are dark brown. It is an inhabitant of Carolina.

THE TYRANT SHRIKE.

The dauntless courage of this bird is very remarkable. It is stated that he will pursue, and is able to put to flight, all kinds of birds that approach his station, from the smallest to the largest, none escaping his fury: "nor did I ever see (says Catesby in his account of South Carolina) any that dared to oppose him while flying; for he does not offer to attack them when sitting. I have seen one of them fix on the back of an Eagle, and persecute him so, that he has turned on his back, and into various postures in the air, in order to get rid of him; and at last was forced to alight on the top of the next tree, from which he dared not move till the little Tyrant was tired, or thought fit to leave him. This is the constant practice of the cock while the hen is brooding. He sits on the top of a bush, or small tree, not far from her nest, near which, if any small birds approach, he drives them away; but the great ones, as Crows, Hawks, and Eagles, he will not suffer to come within a quarter of a mile of him without attacking them. These birds have only a chattering note, which they utter with great vehemence all the time they are fighting. When their young-ones are flown, they are as peaceable as other birds.

From authority so deservedly great as that of Catesby, we cannot but feel it unpleasant to dissent; but by a letter received by Dr. Latham, from Mr. Abbot of Georgia, observations seems to have been made somewhat different from the above:—"A Tyrant Shrike (he says) having built its nest on the outside of a large lofty pine, I was one day considering how I could procure the eggs; when, viewing the nest, I perceived a Crow alight on the branch, break and suck

the eggs, and displace the nest, appearing all the while unconcerned, notwithstanding both the cock and hen continued flying at and striking him with their bills all the while; and as soon as the Crow had completed the robbery, he departed."

The eggs of this bird are flesh-colored, and prettily marked at the larger end with dark pink and a few black spots.

OF THE PARROT TRIBE IN GENERAL.

THIS most extensive tribe is remarkably distinct from all others. The beak is hooked all the way from the base to the tip, and the upper mandible, or division, is moveable. The nostrils are round; and placed in the base of the bill, which in some species is furnished with a cere. The tongue is broad and blunt; the head is large, and the crown flat. The legs are short, with two toes placed before and two behind, for the purpose of climbing.

The Parrots are natives chiefly of tropical regions, where they live, for the most part, on fruit and seeds; though when kept in a cage, they will occasionally eat both flesh and fish. They are gregarious, and excessively noisy and clamorous; yet, though they associate in vast multitudes, they live chiefly in pairs of one male and a female. The place they hold among the birds seems to be exactly that which the Apes and Monkeys occupy among the quadrupeds; for, like these, they are very numerous, imitative, and mischievous. They breed in the hollows of trees, like the Owls; and it is said that the male and female sit alternately upon the eggs. In Europe, they have sometimes been known to lay eggs; but they seldom sit upon them in these cool climates.

The toes of Parrots are sufficiently flexible to answer every purpose of hands, for holding their food, or carrying it to their mouths. In climbing they always use their bill to assist the feet. They are, in general, long-lived.

In a domestic state they are exceedingly docile, and very imitative of sounds; most of the species being able to counterfeit even the human voice, and to articulate words with great distinctness; but their natural voice is a loud, harsh and unpleasant scream. Alexander the Great is supposed to have been the first who introduced Parrots into Europe.

THE BRAZILIAN GREEN MACAW.

The length of this bird is about seventeen inches. Its bill is black; and, on the cheeks, there is a bare white patch, marked with black lines, in which the eyes are placed. The general color of the plumage is green. The forehead is of a chesnut purple; and the crown is blue, which color blends itself with the green as it passes backward. On the lower part of the thighs the feathers are red; and the wings are, in different parts, crimson, blue and black. The tail is green

above, near the ends blue, and beneath of a dull red. The legs are brown, and the claws black.

This Macaw, a native of Jamaica, Guiana, and the Brazils, is as beautiful as it is rare; and it is still more interesting, from its social and gentle disposition. It soon becomes familiar with persons whom it sees frequently, and it seems delighted in receiving and returning their caresses. But it has an aversion to strangers, and particularly to children; for it flies at, and sometimes attacks them with great fury.

GREEN MACAW.

The Green Macaw is exceedingly jealous; it becomes enraged at seeing a young child sharing its mistress's caresses and favors; it tries to dart at the infant; but, as its flight is short and laborious, it can only exhibit its displeasure by gestures and restless movements, and continues to be tormented by these fits till she leaves the child, and takes the bird on her finger. It is then overjoyed, murmurs satisfaction, and sometimes makes a noise resembling the laugh of an old person. Nor can it bear the company of other Parrots; and if one be lodged in the same room it seems to enjoy no comfort.

It eats almost every article of human food. It is particularly fond of bread, beef, fried fish, pastry, and sugar. It cracks nuts with its bill, and picks the kernel out dexterously with its claws. It does not chew the soft fruits; but it sucks them by pressing its tongue against the upper part of the beak: and the harder sorts of food, such as bread and pastry, it bruises or chews, by pressing the tip of the lower mandible upon the most hollow part of the upper.

Like all the other Parrots, the Green Macaw uses its claws with great dexterity; it bends forward the hinder toe to lay hold of the fruits and other things which are given it, to carry them to its bill. The Parrots employ their toes, nearly in the manner as Squirrels and Monkeys do their fore paws; they also cling and hang by them. There is another habit common to the Parrots: they never climb or creep without fastening by the bill; with this they begin, and they use their feet only as secondary instruments of motion.

THE GUINEA, OR LITTLE RED-HEADED PARROT.

The general color of the Guinea Parrot is green; its bill, chin, and forehead are red; and the rump is blue.

In size but little larger than the Lark, and in brilliancy of plumage exceeded by few of its tribe, this pleasing bird claims our greatest admiration. In a native state it is found amidst the forests of Guinea, and also in Ethiopia, Java, and the East Indies, where immense flocks of them are seen. In these countries they often commit as much devastation amongst he corn and fruit, as Sparrows do in Europe.

The trading vessels from these countries seldom fail to bring with

them considerable numbers of Guinea Parrots; but they are so tender, that most of them die in their passage to our colder climate. It has also been observed, that the firing of a vessel's great guns is fatal to many of them, which drop down dead from fear. Although very imitative of the manners of other birds, it is a difficult thing to teach them to articulate words. Some have attained this art, but the instances are rare.

THE GUINEA PARROT.

They are exceedingly kind and affectionate towards each other; and it is observed that the male generally perches on the right side of the female. She seldom attempts to eat before him.

A male and female of this species were lodged together in a large square cage. The vessel which held their food was placed at the bottom. The male usually sat on the same perch with the female, and close beside her. Whenever one descended for food, the other always followed; and when their hunger was satisfied, they returned together to the highest perch of the cage. They passed four years together in this state of confinement; and, from their mutual attentions and satisfaction, it was evident that a strong affection for each other had been excited. At the end of this period the female fell into a state of languor, which had every symptom of old age; her legs swelled, and knots appeared upon them, as if the disease had been of the nature of gout. It was no longer possible for her to descend and take her food as formerly; but the male assiduously brought it to her, carrying it in his bill, and delivering it into hers. He continued to feed her in this manner, with the utmost vigilance, for four months. The infirmities of his mate, however, increased every day; and at length she became no longer able to sit upon the perch: she remained now crouched at the bottom, and from time to time made a few useless efforts to regain the lower perch; while the male, who remained close by her, seconded these feeble attempts with all his power. Sometimes he seized with his bill the upper part of her wing, to try to draw her up to him; sometimes he took hold of her bill, and attempted to raise her up, repeating his efforts for that purpose several times. His countenance, his gestures, his continual solicitude; every thing, in short, indicated, in this affectionate bird, an ardent desire to aid the weakness of his companion, and to alleviate her sufferings. But the scene became still more interesting when the female was at the point of expiring. Her unfortunate partner went round and round her without ceasing; he redoubled his assiduities and his tender cares; he attempted to open her bill, in order to give her nourishment; his emotion every instant increased; he went to her, and returned with the most agitated air, and with the utmost inquietude: at intervals he uttered the most plaintive cries; at other times, with his eyes fixed upon her, he preserved a sorrowful silence. His faithful companion at length expired; he languished from that time, and survived her only a few months.

THE COMMON ASH-COLORED PARROT.

This Parrot is somewhat larger than a Pigeon; and, including the tail measures about twenty inches in length. The bill is black; the cere, and the skin round the eyes, are mealy and white. The plumage is chiefly ash-colored: the rump and lower part of the belly are hoary, with ash-colored edges: the feathers on the head, neck, and under parts, are hoary on their edges. The tail is of a bright red color, having the shafts of the feathers blackish. The legs are ash-colored, and the claws blackish.

THE COMMON ASH-COLORED PARROT.

It is a native of Guinea, and of several of the inland parts of Africa.

This well-known species is that which is now most commonly brought into Europe. It is superior to most others, both in the facility, and the eagerness with which it imitates the human voice; it listens with attention, and strives to repeat; it dwells constantly on some syllables which it has heard, and seeks to surpass every voice by the loudness of its own. We are often surprised by its repeating words or sounds which were never taught it, and which it could scarcely be supposed to have noticed. It seems to prescribe to itself tasks, and tries every day to retain its lesson. This engages its attention even in sleep; and, according to Marcgrave, it prattles in its dreams. Its memory, if early cultivated, becomes sometimes astonishing. Rhodiginus mentions a Parrot which could recite correctly the whole of the Apostles' Creed.

A Parrot which Colonel O'Kelly bought for a hundred guineas at Bristol, not only repeated a great number of sentences, but answered many questions: it was also able to whistle many tunes. It beat time with all the appearance of science; and so accurate was its judgment that, if by chance it mistook a note, it would revert to the bar where the mistake was made, correct itself, and still beating regular time, go through the whole with wonderful exactness. Its death was thus anounced in the General Evening Post for the ninth of October, 1802: "A few days ago died, in Half-moon-street, Piccadilly, the celebrated Parrot of Colonel O'Kelly. This singular bird sang a number of songs in perfect time and tune. She could express her wants articulately, and give her orders in a manner approaching nearly to rationality. Her age was not known; it was, however, more than thirty years, for previously to that period, Mr. O'Kelly bought her at Bristol for a hundred guineas. The Colonel was repeatedly offered five hundred guineas a year for the bird, by persons

who wished to make a public exhibition of her; but this, out of tenderness to the favorite, he constantly refused. The bird was dissected by Dr. Kennedy and Mr. Brookes; and the muscles of the larynx, which regulate the voice, were found, from the effect of practice, to be uncommonly strong."

The sister of M. de Buffon had a Parrot of this species which would frequently talk to himself, and seemed to fancy that some one addressed him. He often asked for his paw, and answered by holding it up. Though he liked to hear the voice of children, he appeared to have an antipathy to them; he pursued them, and bit them till he drew blood. He had also his objects of attachment; and though his choice was not very nice it was constant. He was excessively fond of the cook-maid; followed her every where, sought for, and seldom missed finding her. If she had been some time out of his sight, the bird climbed with his bill and claws to her shoulders and lavished on her his caresses. His fondness had all the marks of close and warm friendship. The girl happened to have a sore finger, which was tedious in healing, and so painful as to make her scream. Whilst she uttered her moans, the Parrot never left her chamber. The first thing he did every day was to pay her a visit; and this tender condolence lasted the whole time of the cure, when he again returned to his former calm and settled attachment. Yet this strong predilection for the girl seems to have been more directed to her office in the kitchen, than to her person; for, when another cook-maid succeeded her, the Parrot showed the same degree of fondness to the new-comer, the very first day.

Parrots not only imitate discourse, but also mimic gestures and actions. Scaliger saw one that performed the dance of the Savoyards at the same time that it repeated their song. The one last mentioned, was fond of hearing a person sing; and when he saw him dance, he also tried to caper, but with the worst grace imaginable, holding in his toes, and tumbling back in a most clumsy manner.

The society which the Parrot forms with man is, from its use of language, much more intimate and pleasing, than what the monkey can claim from its antic imitation of our gestures and actions. It highly diverts and amuses us; and in solitude it is company: the bird takes part in conversation, it laughs, it breathes tender expressions, or mimics grave discourse; and its words, uttered indiscriminately, please by their incongruity, and sometimes excite surprise by their aptness. Willughby tells us of a Parrot, which, when a person said to it, "Laugh, Poll, laugh," laughed accordingly, and the instant after screamed out, "What a fool to make me laugh!" Another, which had grown old with its master, shared with him the infirmities of age. Being accustomed to hear scarcely any thing but the words, "I am sick;" when a person asked it, "How d'ye do, Poll? how d'ye do?" "I am sick," it replied in a doleful tone, stretching itself along, "I am sick."

Dr. Goldsmith says, that a Parrot belonging to King Henry the Seventh, having been kept in a room next the Thames, in his palace at Westminster, had learned to repeat many sentences from the boat

men and passengers. One day, sporting on its perch, it unluckily fell into the water. The bird had no sooner discovered its situation, than it called aloud, "A boat! twenty pounds for a boat!" A waterman, happening to be near the place where the Parrot was floating, immediately took it up, and restored it to the king; demanding, as the bird was a favorite, that he should be paid the reward that it had called out. This was refused; but it was agreed that, as the Parrot had offered a reward, the man should again refer to its determination for the sum he was to receive—"Give the knave a groat," the bird screamed aloud, the instant the reference was made.

Mr. Locke, in his Essay on the Human Understanding, has related an anecdote concerning a Parrot, of which, however incredible it may appear, he seems to have had so much evidence, as at least to have believed it himself. The story is this: During the government of Prince Maurice in Brazil, he had heard of an old Parrot that was much celebrated for answering, like a rational creature, many of the common questions that were put to it So much had been said respecting this bird, that the curiosity of the Prince was roused, and he directed it to be sent for. When he was introduced into the room where the Prince was sitting, in company with several Dutchmen, it immediately exclaimed in the Brazilian language, "What a company of white men are here!" They asked it, "Who is that man?" pointing to the Prince: the Parrot answered, "Some general or other." When the attendants carried it up to him, he asked it, through the medium of an interpreter, (for he was ignorant of its language,) "From what place do you come?" The Parrot answed, "From Marignan." The Prince asked, "To whom do you belong?" It answered, "To a Portuguese." He asked again, "What do you do there?" It answered, "I look after chickens!" The Prince, laughing, exclaimed, "You look after chickens!" The Parrot in answer said, "Yes, I; and I know well enough how to do it;" clucking at the same time, in imitation of the noise made by the hen to call together her young ones.

The females of this species lay their eggs in the hollows of trees; and there is no way of getting at them, except by cutting down and cleaving the trees.

THE YELLOW-WINGED PARROT.

The length of the Yellow-winged Parrot is about thirteen inches. The bill is whitish, and the cere hoary. The general color of the body is green; and the feathers on the hind part of the neck and on the back, have black margins. The forehead is of a whitish-ash color; and the top of the head, cheeks, throat, and forepart of the neck are yellow: the hind head is yellow-green. The thighs and the ridges of the wings are yellow, the remainder of the wings are, in different parts, red, yellow, and green, with the greater quills black. The four middle tail-feathers are green, and yellowish near the end; the others are partly red and partly green. The legs are hoary, and the claws ash-colored. It is a native of South America.

We know nothing respecting the habits of this bird in a state of nature, but Father Bougot, who had one of them for some time in his possession, communicated to M. de Buffon, the following account of its manners and disposition in a tame state:

"It is (he says) extremely susceptible of attachment to its master; it is fond of him, but requires frequent caresses, and seems disconsolate if neglected, and vindictive if provoked. It has fits of obstinacy; it bites during its ill-humor, and immediately laughs, exulting in its mischief. Correction and rigorous treatment only harden it; gentle usage alone succeeds in mollifying its temper.

"The inclination to gnaw whatever it can reach, is very destructive; it cuts the cloth of the furniture, splits the wood of the chairs, and tears in pieces paper, pens, &c. And if it be removed from the spot where it stands, its proneness to contradiction will instantly hurry it back. But this mischievous disposition is counterbalanced by agreeable qualities, for it remembers readily whatever it is taught to say. Before articulating it claps its wings and plays on its roost; in a cage it becomes dejected, and continues silent; and it never prattles well except when it enjoys its liberty.

"In its cheerful days it is affectionate, receives and returns caresses, and listens and obeys; though a peevish fit often interrupts the harmony. It seems affected by the change of weather, and becomes silent; the way to reanimate itis to sing beside it, and it then strives, by its noisy screams, to surpass the voice which excites it. It is fond of children; in which respect it differs from most other Parrots. It contracts a predilection for some of them, and suffers them to handle and carry it; it caresses them, and will bite ferociously any person who then attempts to touch them. If its favorite children leave it, it is unhappy, follows, and calls loudly after them. During the time of moulting it is much reduced, and seems to endure great pain; and this state lasts for nearly three months."

The power of imitating exactly articulate discourse, implies in the Parrot a very peculiar and perfect structure of organ; and the accuracy of its memory (though independent of understanding) manifests a closeness of attention, and a strength of mechanical recollection, that no other bird possesses in so high a degree. Accordingly, all naturalists have remarked the singular form of its bill, of its tongue, and its head. Its bill, round on the outside and hollow within, has, in some degree, the capacity of a mouth, and allows the tongue to play freely; and the sound, striking against the circular border of the lower mandible, is there modified as on a row of teeth, while the concavity of the upper mandible reflects it like a palate; hence the animal does not utter a whistling sound, but a full articulation. The tongue which modulates all sounds, is proportionably larger than in man; and would be more voluble, were it not harder than flesh; and invested with a strong horny membrane.

From the peculiar structure of the upper mandible of its bill, the Parrot has a power, which no other birds have, of chewing its food. The Parrot seizes its food sideways, and gnaws it deliberately. The lower mandible has little motion, but that from right to left is most

perceptible; and this is often performed when the bird is not eating, whence some persons have supposed it to ruminate. In such cases, however, the bird may be only whetting the edge of this mandible, with which it cuts and bites its aliment.

THE MACAWS.

Many naturalists imagine, and with some reason, that the Psittacidæ ought to be formed into an order by themselves. In this family the construction of the bill is very remarkable. As the curved tip of the bill would prevent the bird from opening it wide enough to admit its food, the upper mandible is united to the skull by a kind of hinge joint, of equal strength and flexibility. When climbing among the branches of trees, or about their cages, the Parrots invariably make great use of their hooked bills in assisting themselves both in ascending and descending. The crossbills have been observed to climb much in the same way.

BLUE AND YELLOW MACAW.

The Parrots are said to be very long lived, some have certainly been known to live upwards of eighty years in captivity, and may be imagined to exceed that period in a wild state.

The Macaws are natives of South America. The blue and yellow Macaw inhabits Brazil, Guiana and Surinam, living principally on the banks of rivers. Of one of the Macaws, the Carolina Parrot, or Parrakeet as Wilson calls it, the following anecdote is told by that enterprising naturalist:—

"Having shot down a number, some of which were only wounded, the whole flock swept repeatedly round their prostrate companions, and again settled on a low tree, within twenty yards of the spot where I stood. At each successive discharge, though showers of them fell, yet the affection of the survivors seemed rather to increase; for, after a few circuits round the place, they again alighted near me, looking down on their slaughtered companions with such manifest symptoms of sympathy and concern, as entirely disarmed me."

Wilson also makes mention of a singular idea, that the brains and intestines of the Carolina Parrot (which lives on cockle-burs) are poisonous to Cats. Why the brains should be so is rather incomprehen-

sible, although we can easily understand that the Parrot might take some substance into its stomach injurious to Cats. Wilson tried the experiment after being repeatedly disappointed of a patient, but came to no conclusion on the subject.

CAROLINA PARROT.

"Having shut up a Cat and her two Kittens, the latter only a few days old, in a room with the head, neck, and the whole intestines of the Parrakeet, I found on the next morning the whole eaten except a small part of the bill. The Cat exhibited no symptom of sickness, and at this moment, three days after the experiment had been made, she and her Kittens are in their usual health. Still however the effect might have been different, had the daily food of the bird been cockle-burs instead of Indian corn."

THE RINGED PARRAKEET.

Is frequently seen domesticated in this country, where its pleasing manners and gentle disposition render it a great favorite. It seems to be exceedingly fond of ripe walnuts, divided in halves; and, while it is picking out the kernel, continually utters a short clucking sound indicative of pleasure.

It soon learns to repeat words and short sentences, and to speak with tolerable distinctness. Sometimes when excited, it utters most ear-piercing screams, and always appears to practice any new accomplishment when it thinks that no one is within hearing. A Ringed Parrakeet belonging to one of my scholars was accustomed to live in the school-room. At first it used to become angry that it was not noticed during school-hours, and to utter a succession of screams; but after being shut up in a dark closet several times, it learned to behave very demurely,—giving an example worthy of imitation to several of its human play-fellows. I am sorry to say, that the bird escaped from its cage, and was shot by an ignorant farmer in the neighborhood.

THE COCKATOOS

Are remarkable for the powdery surface of their wings, and the crest on the head, which can be raised or depressed at pleasure. The Sulphur-crested Cockatoo is an inhabitant of New Guinea. Its color is white, and the crest is of a sulphur yellow. Its white plumage glancing among the dense dark foliage of its native forests, imparts a wonderful beauty to the scene; and as Sir Thomas Mitchell remarks, "amidst the umbrageous foliage, forming dense masses of shade, the white Cockatoo sported like spirits of light." This Cockatoo is easily tamed, and is of a very affectionate disposition. When in captivity it has been known to live to the age of one hundred and twenty years. Its nest is built in hollow trees, and the crevices of rocks. The eggs are white. The length of the bird is about eighteen inches.

THE COCKATOO.

OF THE TOUCANS IN GENERAL.

THE beaks of all the Toucans are enormously large, and convex; they are bent at the end, hollow, very light, and jagged at the edges. The nostrils are small, round, and situated close to the head. The tongue is long, narrow, and feathered at the edges. The feet are adapted for climbing, and have the toes placed two forward and two backward.

These birds are all natives of the hotter parts of South America, where they feed on fruit. They are very noisy, and are generally seen in small flocks of eight or ten in number: they are continually moving from place to place in quest of food, going northward or southward as the fruits ripen. If brought up young they are easily tamed, and, in this state, are very familiar. They breed in the hollows of trees, frequently in places deserted by Woodpeckers: and the female lays two eggs. It is probable that they have more than one brood in the year.

THE RED-BELLIED TOUCAN.

RED-BELLIED TOUCAN.

This Toucan, which is a native of Guiana and Brazil, is about twenty inches in length. The bill is six inches long, and nearly two inches thick at the base; it is of a yellowish green color, reddish at the tip. The nostrils are at the base of the bill; but are not, as in some of the species, covered with feathers. The principal upper parts of the body, and the throat and neck, are of a glossy black, with a tinge of green: the lower part of the back, the rump, upper part of the tail, and small feathers of the wings, are the same, with a cast of ash-color. The breast is orange-color. The belly, sides, thighs, and the short feathers of the tail, are bright red: the remainder of the tail is of a greenish black, tipped with red. The legs and claws are black.

In several parts of South America these birds have the name of Preacher Toucan; from the circumstance of one of the flock being always perched at the top of a tree, above its companions, while they are asleep. This makes a continual noise, resembling ill-articulated sounds, moving its head during the whole time to the right and left, in order, it is said, to deter birds of prey from seizing on them.

They feed chiefly on fruits. The females build their nests in the holes of trees; and no bird better secures its offspring from external injury than this. It has not only birds, men, and serpents to guard against; but a numerous train of Monkeys, which are more prying, mischievous, and hungry, than all the rest. The Toucan, however, sits in its hole, defending the entrance with its great beak; and if the Monkey ventures to offer a visit of curiosity, the Toucan gives him such a welcome, that he is soon glad to escape.*

The Red-bellied Toucans are easily tamed, and, in that state, they will eat of almost any thing that is offered to them. Pozzo, who bred up one of these birds, and had it perfectly domesticated, informs us that it leaped up and down, wagged its tail, and cried with a voice resembling that of a Magpie. It fed upon the same things as Parrots; but was most greedy of grapes. These being plucked off one by one, and thrown to it, it would with great dexterity catch in the air before they fell to the ground. Its bill, he adds, was hollow, and on that

* There appears to be some doubt as to the real strength of the beak of the Toucan. This assertion of M. de Buffon seems to contradict what he has before said of the weakness of this enormous and apparently disproportionate member. Willughby, p. 129, says, that, notwithstanding its extreme lightness, "it is of a bony substance; and therefore is not to be wondered that, dexterously used, it should by many strokes pierce a tree; the bird having, perchance, the instinct to choose a rotten one." It is from this writer that Buffon has derived the latter part of the above account.

account very light, so that the bird had but little strength in this apparently formidable weapon; nor could it peck or strike smartly with it. But its tongue seemed to assist the efforts of this unwieldy machine; it was long, thin, and flat, not much unlike one of the feathers on the neck of a Dunghill-cock; this the bird moved up and down, and often extended five or six inches from the bill. It was of a flesh-color, and remarkably fringed on each side with small filaments.

It is probable that this long tongue has greater strength than the thin hollow beak that contains it; and that the beak is only a kind of sheath for this peculiar instrument, used by the Toucan in making its nest, and in obtaining its provision.

These birds are stated to be in great request in South America; both on account of the delicacy of their flesh, and the beauty of their plumage, particularly the feathers of the breast. The skin of this part the Indians pluck off, and, when dry, glue to their cheeks: they consider these feathers an irresistible addition to their beauty.

THE TOCO TOUCAN.

The Toco Toucan is distinguished by the enormous size of its serrated bill. It is found in Brazil.

The Curl-crested Aracari, found also in Brazil, is distinguished by a crest of curled feathers.

The Toucan family is very numerous, including a great many species, diffused over all the tropical regions of the earth. They all agree, however, in the characteristic of a bill, very large, as compared with the other parts of the bird. This characteristic is so strongly marked, that of all the different species of Toucans, not one would ever be mistaken for a bird of any other class.

TOCO TOUCAN.

OF THE HORNBILLS IN GENERAL.

THE nostrils of these birds are small, round, and situated behind the base of the bill. The tongue is small and short. The legs are scaly: the toes placed three forward, and one backward; the middle toe is connected to the outermost, as far as the third joint, and to the innermost, as far as the first.

The animals of this, as well as the last tribe, have all singularly disproportioned bills. Those of the Hornbills are bent, jagged at the edges, and have frequently on the upper mandible, a protuberance, somewhat resembling another bill.

These birds seem to hold the same place on the old continent, as the Toucans do on the new; and probably they subsist on similar food.

THE MALABAR HORNBILL.

This bird is about two feet six inches long, and in bulk somewhat bigger than a Crow. The bill is more than five inches in length, having on its upper part a protuberance rounded at the top, reaching two-thirds of its length, and tending to a sharp edge in front: this extends beyond the eyes, and in the fore part is black. The base and edges of both mandibles, as well as a small portion of the upper part are also black: the general color of both of these is a dingy yellow. The plumage is in general black, some of the feathers inclining, on their margins, to green; but the lower part of the breast, the belly, the thighs, and the tip of the wings and tail, (except one outer feather in each of the former, and the two middle feathers in the latter, which are colored like the rest of the body,) are black. The legs are black, and very short.

In a wild state these extraordinary birds inhabit the great woods of Malabar and the East Indies, where they usually roost on the highest and most inaccessible trees, and in preference, upon the dead and withered branches. The females form their nests in the worm-eaten holes of the trunk, and generally lay four or five dingy white eggs. The young-ones, when first produced, are completely naked, and, for some time, the protuberance on their bill is not more than two or three lines in depth. This, by degrees, increases, but does not attain its full growth until the birds are two years old: their plumage then assumes its proper colors.

The protuberance upon the bill is frequently observed to be injured by the use to which the birds apply it, in beating the branches of trees for the purpose of detaching the bark, in order to discover insects, and even small Lizards, which take refuge there, and on which they feed.

In the island of Ceylon these birds are in great request by the inhabitants who carefully rear them in a domestic state from their

propensity to chase and devour Mice and other vermin, of which they clear the houses with as much address as Cats.

One of these birds, which was brought into England some years ago, exhibited several interesting peculiarities in its manners. It would leap forward, or sideways, with both legs at once, like a Magpie or Jay, and never walked. Its general air was rather stupid and dull; though when agitated, it would sometimes put on a fierce look. It would eat lettuce, and some other esculent vegetables, after bruising them with its bill; it would also devour Rats, Mice, small birds or raw flesh. It had different tones of voice on different occasions; sometimes a hoarse sound in the throat, like *ouck, ouck;* at other times a hoarse and weak noise, not unlike the clucking of a Turkey-hen. It used to display its wings, and enjoy itself in the sunshine; but it shivered in the cold. At the approach of winter it died, unable to bear the severity of our climate, so different to its nature from that which it had left.

THE AFRICAN HORNBILL, AND RHINOCEROS HORNBILL.

The length of the African Hornbill is nearly four feet. Its bill is about ten inches long, and the horny protuberance upon it appears as if cut, with an aperture somewhat resembling the form of a club on cards, or an iron lance. This excrescence is of the same substance as the bill, but thinner, and yields to pressure. The aperture is about an inch long, and half an inch wide, having on the inside a black membrane, of use in preventing the introduction of any foreign body into the horn, which communicates interiorly with the head. The general color of the plumage is a sooty black; some of the large feathers of the wings are, however perfectly white.

RHINOCEROS HORNBILL.

The former of these species are found in various parts of Africa, but are not common near the sea-coasts. The females build in large, thick trees, and form a covered nest, like that of a Magpie, but three or four times as large. This is placed firmly

on the trunk, and the entrance to it is always on the east side. They sometimes have as many as eighteen young ones.

These birds, in general, only run along the ground; but, being of a distrustful disposition, they are soon raised by alarm, when they usually fly to a great distance, before they again alight. Their food consists principally of insects and Lizzards. The male and female are always to be seen in company; or sometimes there are two females to one male, but never more. The Negroes esteem this Hornbill sacred, never killing it themselves, and always, if possible, preventing the Europeans from firing at it. They have a superstition that the death of one of these birds gives cold to the whole district. M. Geoffroy, who examined several of them, was observed to kill one: they reproached him with the utmost severity, and every one present put his nose to the excrescence on the bill, in order to secure himself from the injurious consequences which he imagined would attend its death.

THE RHINOCEROS HORNBILL.—The protuberance of the beak of the Rhinoceros Hornbill is so large, and so much recurved, as to appear rather an enormous deformity, than a natural production. This bird is somewhat smaller than a Turkey, and of a black color, except the tail, which is white, and marked with a bar of black. The beak is nearly a foot long, and of a pale yellow color.

These birds which are found in Sumatra and several other parts of the east, feed on flesh and carrion. They are said to follow the hunters, for the purpose of feeding on the entrails of the beasts that are killed. We are told also that they chase rats and mice, and after pressing them flat with their bill, in a peculiar manner, toss them up into the air, and swallow them whole immediately on their descent.

OF THE CROW TRIBE IN GENERAL.

THESE birds have a strong bill; with the upper mandible a little bent, the edges sharp, and, in general, a small notch near the tip. The nostrils are covered with bristles reflected over them; and the tongue is divided at the end. The toes are placed three forward, and one backward; and the middle toe is united to the outer one as far as the first joint.

Few animals are more generally dispersed over the world than the different species of Crow; some of them being found in almost every climate. They are prolific, clamorous, and usually associate in flocks. Most of them make their nests in trees, and the number of young-ones which they produce is five or six. They feed promiscuously on animal and vegetable substances. Some of the species, when in great numbers, are supposed to be injurious to man, by devouring grain; but they make amends for this injury, by the immense quantities of noxious insects and other vermin which they destroy.

THE RAVEN.

Among the ancients the Raven was esteemed a bird of much importance in augury; and the various changes and modulations of its voice were studied with the greatest attention, and were too often used by designing men to mislead the unwary.

THE RAVEN.

It frequents the neighborhood of great towns; where it is useful in devouring carrion and filth, which it scents at a vast distance. It is a cunning bird, and generally careful in keeping beyond the reach of a gun.

When brought up young, the Raven becomes very familiar; and, in a domestic state, he possesses many qualities that render him highly amusing. Busy, inquisitive, and impudent, he goes everywhere, affronts and drives off the dogs, plays his tricks on the poultry, and is particularly assiduous in cultivating the good will of the cook-maid, who is generally his favorite in the family. But, with these amusing qualities, he often also has the vices and defects of a favorite. He is a glutton by nature, and a thief by habit. He does not confine himself to petty depredations on the pantry or the larder; he aims at more magnificent plunder—at spoils which he can neither exhibit nor enjoy, but which, like a miser, he rests satisfied with having the satisfaction of sometimes visiting and contemplating in secret. A piece of money, a teaspoon, or a ring, is always a tempting bait to his avarice: these he will slily seize upon, and, if not watched, will carry to some hiding-place.

Mr. Montagu was informed by a gentleman, that his butler, having missed many silver spoons, and other articles, without being able to account for the mode in which they disappeared, at last observed a tame Raven that was kept about the house, with one in his mouth, and, on watching him to his hiding-place, discovered there upwards of a dozen more.

Notwithstanding the injury these birds do to the farmer, a popular respect is paid to them, from their having been the birds that fed the prophet Elijah in the wilderness. This prepossession in favor of the Raven is of a very ancient date: the Romans, who thought the bird ominous, paid to it, from motives of fear, the most profound veneration.

A Raven, as Pliny informs us, that had been kept in the Temple of Castor, flew down into the shop of a tailor, who was highly delighted with its visits. He taught the bird several tricks; but particularly to pronounce the names of the emperor Tiberius, and of the whole royal family. The tailor was beginning to grow rich by those who came to see this wonderful Raven; till an envious neighbor, displeased at his success, killed the bird, and deprived the tailor of all his hopes of future fortune. The Romans, however, thought it necessary to take the poor tailor's part; they accordingly punished the man who offered the injury, and gave to the Raven all the honors of a splendid interment.

The female builds her nest early in the spring, in trees, and the holes of rocks; in which she lays five or six bluish-green eggs, spotted with brown. She sits about twenty days: during which time she is constantly attended by the male, who not only furnishes her with abundance of food, but also, whenever she leaves the nest, takes her place.

Of the perseverance of the Raven in the act of incubation, Mr. White has related the following singular anecdote:—In the centre of a grove near Selborne, there stood an oak, which, though on the whole shapely and tall, bulged out into a large excrescence near the middle of the stem. On this tree a pair of Ravens had fixed their residence for such a series of years, that the oak was distinguished by the title of "The Raventree." Many were the attempts of the neighboring youths to get at this nest: the difficulty whetted their inclinations, and each was ambitious of surmounting the arduous task; but, when they arrived at the swelling, it jutted out so in their way, and was so far beyond their grasp, that the boldest lads were deterred, and acknowledged the undertaking to be too hazardous. Thus the Ravens continued to build, nest upon nest, in perfect security, till the fatal day on which the wood was to be levelled. This was in the month of February, when those birds usually sit. The saw was applied to the trunk, the wedges were inserted into the opening, the woods echoed to the heavy blows of the beetle or mallet, the tree nodded to its fall; but still the dam persisted in sitting. At last, when it gave way, the bird was flung from her nest; and, though her parental affection deserved a better fate, was whipped down by the twigs, which brought her dead to the ground.

The Raven feeds chiefly on small animals; and is said to destroy Rabbits, young Ducks, and Chickens; and sometimes even Lambs, when they happen to be dropped in a weak state. In the northern regions, it preys in concert with the White Bear, the Arctic Fox, and the Eagle: it devours the eggs of other birds and eats shore-fish, and shell-fish; with the latter it soars into the air, and drops them

from on high to break the shells, and thus to get at the contents. Willughby says, that Ravens may be trained to fowling like hawks.

The faculty of scent in these birds must be very acute; for in the coldest of the winter-days, at Hudson's Bay, when every kind of effluvia is almost instantaneously destroyed by the frost, Buffaloes and other beasts have been killed where not one of these birds was seen; but, in a few hours, scores of them have been found collected about the spot, to pick up the blood and offal.

THE CARRION, OR COMMON CROW.

These birds live chiefly in pairs, in the woods where they build their nests on the trees. The female lays five or six eggs, much like those of the Raven; and, while sitting, is always fed by the male. They feed on putrid flesh of all sorts; as well as on worms, insects, and various kinds of grain. Like the Ravens, they sometimes pick out the eyes of Lambs when just dropped. They also do much mischief in Rabbit-warrens, by killing and devouring the young Rabbits; and Chickens and young Ducks do not always escape their attacks.

CARRION CROW.

Mr. Montagu states, that he once saw a Crow in pursuit of a Pigeon, at which it made several pounces like a Hawk; but the Pigeon escaped by flying in at the door of a house. He saw another strike a Pigeon dead from the top of a barn. It is so bold a bird, that neither the Kite, the Buzzard, nor the Raven, approaches its nest without being driven away. When it has young-ones it will even insult the Peregrine Falcon, and at a single pounce will bring that bird to the ground.

When poultry-hens lay their eggs in hedge-bottoms or stack-yards, Crows are often caught in the act of devouring them. On the northern coast of Ireland, a friend of Dr. Darwin saw above a hundred Crows at once preying upon Muscles: each Crow took a Muscle up into the air twenty or thirty yards high, and let it fall on the stones, and thus, by breaking the shell, got possession of the animal. It is related that a certain ancient philosopher, walking along the sea-shore to gather shells, one of these unlucky birds mistaking his bald head for a stone dropped a shell-fish upon it, and killed at once a philosopher and an Oyster.

The familiarity and audacity of the Crows in some parts of the East is astonishing. They frequent the courts of houses belonging to the Europeans; and, as the servants are carrying in dinner, will alight on the dishes, and fly away with the meat, if not driven off by persons who attend with sticks for that purpose.

In some parts of North America they are extremely numerous, and destroy the new-sown maize by pulling it out of the ground and devouring it. The ripening plants they also injure, by picking holes in the leaves which surround the ears, and thus exposing them to corruption by letting in the rain. The inhabitants of Pennsylvania and New Jersey allowed a reward of three-pence or four-pence a-head for destroying these birds; but the law was soon repealed, on account of the expense which it brought upon the public treasury.

There are at present more of these birds bred in England than in any other country of Europe. In the reign of Henry the Eighth, Crows had become so numerous, and were thought so prejudicial to the farmer, that they were considered an evil worthy of parliamentary redress; and an act was passed for their destruction, in which also Rooks and Choughs were included. Every hamlet was ordered to destroy a certain number of Crows' nest for ten successive years; and the inhabitants were compelled to assemble at stated times during that period, in order to consult on the most proper and effectual means of extirpating them.

The following are modes adopted in some countries for catching these birds:—A Crow is fastened alive on its back firmly to the ground, by means of a brace on each side, at the base of the wings. In this painful position the animal struggles and screams; the rest of its species flock to its cries from all quarters, with the intention, probably, of affording relief. But the prisoner, to extricate himself, grasping at every thing within reach, seizes with his bill and claws, which are left at liberty, all that come near him, and thus delivers them a prey to the bird-catcher. Crows are also caught by cones of paper baited with raw flesh; as the Crow introduces his head to devour the bait, which is near the bottom, the paper, being besmeared with bird-lime, sticks to the feathers of the neck, and he remains hooded. Unable to get rid of this bandage, which entirely covers his eyes, the Crow rises almost perpendicularly into the air, the better to avoid striking against any object; till, quite exhausted, he sinks down near the spot from which he mounted.

If a Crow be put into a cage, and exposed in the fields, his calls generally attract the attention of others that are in the neighborhood, which flock round their imprisoned companion. This plan is sometimes adopted in order to get these birds within gun-shot; for, however shy they may otherwise be, their care is said in this case to be so much occupied on their friend, as to render them almost heedless of the gunner's approach.

Willughby states, that this bird is capable of being taught to articulate words with considerable distinctness. By the ancients it was esteemed a bird of bad omen. The Crow is so rare in Sweden, that Linnæus speaks of it as a bird that he never knew killed in that country but once.

THE ROOK.

The Rook is about the size of the Carrion Crow, but its plumage is more glossy. It also differs in having its nostrils and the root of the bill naked: in the Crow, these are covered with bristly hair. This difference arises from the Rook's thrusting its bill continually into the earth, in search of worms and other food.

THE ROOK.

Besides insects, the Rooks feed on different kinds of grain, thus causing some inconvenience to the farmer; but this seems greatly repaid by the good they do to him, in extirpating the maggots of some of the most destructive insects of the Beetle tribe. In some parts of Great Britain, the farmers find it their interest to encourage the breed of Rooks, as the only means of freeing their grounds from the grub which produces the Cock-chafer, and which in this state destroys the roots of corn and grass to such a degree, "that (says Mr. Stillingfleet, one of the most accurate observers of nature which that country ever produced) I have myself seen a piece of pasture-land where you might turn up the turf with your foot." An intelligent farmer in Berkshire informed this gentleman that one year, while his men were hoeing a field of turnips, a great number of Rooks alighted in a part of it where they were not at work. The consequence was a remarkable fine crop in this part, while in the remainder of the field there were scarcely any turnips that year.

These birds are gregarious, being sometimes seen in flocks so great as to darken the air in their flight. They build their nests on high trees, close to each other; generally selecting a large clump of the tallest trees for this purpose. When once settled, they every year frequent the same place. Rooks are, however, bad neighbors to each other; for they are continually fighting and pulling to pieces each other's nests. These proceedings seem unfavorable to their living in such close community: and yet, if a pair offer to build on a separate tree, the nest is plundered and demolished at once. Some unhappy couples are not permitted to finish any nest till the rest have all completed their buildings; for as soon as they arrange a few sticks together, a party comes and demolishes the fabric. It generally happens that one of the pair is stationed to keep guard, while the other goes abroad for materials. From their conduct in these circumstances our cant-word *rooking*, for cheating, originated.

As soon as the Rooks have finished their nests, and before they lay,

the cock birds begin to feed the hens. These receive the bounty of their mates with a fondling, tremulous voice, and fluttering wings, and with all the little blandishments that are expressed by the young while in a helpless state. This gallant deportment of the males is continued through the whole season of incubation.

New-comers are often severely beaten by the old inhabitants, (who are not fond of intrusions from other societies,) and are even frequently driven quite away. Of this an instance occurred near Newcastle, in the year 1783. A pair of Rooks, after an unsuccessful attempt to establish themselves in a rookery at no great distance from the Exchange, were compelled to abandon the attempt, and take refuge on the spire of that building; and, though constantly interrupted by other Rooks, they built their nest on the *top of the vane*, and reared their young-ones undisturbed by the noise of the populace below them:—the nest and its inhabitants were of course turned about by every change of the wind. They returned and built their nest every year on the same place, till the year 1793, soon after which the spire was taken down. A small copper-plate was engraved, of the size of a watch-paper, with a representation of the top of the spire and the nest; and so much pleased were the inhabitants and other persons with it, that as many copies were sold as produced to the engraver the sum of ten pounds.

A remarkable circumstance respecting these birds occurred a few years ago at Dallam Tower, in Westmoreland, the seat of Daniel Wilson Esq. There were two groves adjoining to the park, one of which had, for many years, been the resort of a number of Herons, that regularly every year built and bred there. In the other was a large rookery. For a long time the two tribes lived peaceably together. At length, the trees of the heronry were cut down, and the young brood perished by the fall of the timber. The parent birds, not willing to be driven from the place, endeavored to effect a settlement in the rookery. The Rooks made an obstinate resistance; but, after a desperate contest, in the course of which many of the Rooks and some of the Herons lost their lives, the latter at length succeeded in obtaining possession of some of the trees, and that very spring built their nests afresh. The next season a similar conflict took place; which, like the former, was terminated by the victory of the Herons. Since this time, peace seems to have been agreed upon between them; the Rooks have relinquished part of the grove to the Herons, to which part alone they confine themselves; and the two communities appear to live together in as much harmony as they did before the dispute.

The following anecdote of this sagacious community is related by Dr. Percival, in his Dissertations: "A large colony of Rooks had subsisted many years in a grove on the banks of the river Irwell, near Manchester. One serene evening I placed myself within the view of it, and marked with attention the various labors, pastimes, and evolutions of this crowded society. The idle members amused themselves with chasing each other through endless mazes; and, in their flight, they made the air sound with an infinitude of discordant noises. In the midst of these playful exertions, it unfortunately happened that one Rook, by a sudden turn, struck his beak against the wing of

another. The sufferer instantly fell into the river. A general cry of distress ensued. The Birds hovered, with every expression of anxiety, over their distressed companion. Animated by their sympathy, and, perhaps, by the language of counsel known to themselves, he sprang into the air, and by one strong effort, reached the point of a rock which projected into the water. The joy became loud and universal; but, alas! it was soon changed into notes of lamentation; for the poor wounded Bird, in attempting to fly towards his nest, again dropped into the river, and was drowned, amidst the moans of his whole fraternity."

There seems to exist a wonderful antipathy between these birds and the Raven. Mr. Markwick says, that as soon as a Raven had built her nest in a tree adjoining a very numerous rookery, all the Rooks immediately left the spot, and did not return to build there afterwards. At the Bishop of Chester's rookery at Broomham, near Hastings, upon a Raven's building her nest in one of the trees, all the Rooks forsook the spot; they however returned to their haunts in the autumn, and formed their nests there the succeeding year. It is no very difficult task to account for this antipathy. The Raven will scarcely suffer any bird to come within a quarter of a mile of its nest, being very fierce in defending it. It besides seizes the young Rooks from their nests, to feed its own offspring. This Mr. Lambert was an eye-witness to, at Mr. Seymer's at Harford, in Dorsetshire; for there was no peace in the rookery night or day, till one of the old Ravens was killed, and the nest was destroyed.

Rooks begin to build in March; and, after the breeding-season is over, they forsake their nesting-trees, and for sometime roost elsewhere; but they have always been observed to return in August. In October they repair their nests.

When the first brood of Rooks are sufficiently fledged, they leave their nest-trees in the day-time, and resort to some distant place in search of food; but they return regularly every evening in vast flights, to their nests; where, after flying round several times with much noise and clamor, till they are all assembled together, they take up their abode for the night.

Mr. White, in his Natural History of Selborne, speaking of the evening exercises of Rooks in the autumn, remarks, that, just before dusk, they return in long strings from the foraging of the day, and rendezvous by thousands over Selborne Down, where they wheel round, and dive in a playful manner in the air, exerting their voices, which being softened by the distance, become a pleasing murmur, not unlike the cry of a pack of Hounds in deep echoing woods. When this ceremony is over, with the last gleam of light they retire to the deep beech-woods of Tisted and Kepley. We remember (says Mr. White) a little girl, who, as she was going to bed, used to remark, on such an occurrence, in the true spirit of physico-theology, that the Rooks were saying their prayers; and yet this child was much too young to be aware that the Scriptures have asserted of the Deity—that "*He feedeth the Ravens, who call upon him.*"

In the parts of Hampshire adjacent to the New Forest, when the

Rook has reared his progeny, and has carried off such of them as have escaped the arts of men and boys, he retires every evening at a late hour, during the autumn and winter months, to the closest coverts of the forest, after having spent the day in the open fields and enclosures, in quest of food.

Among all the sounds of animal nature, few are more grateful than the cawing of Rooks. The Rook has but two or three notes, and when he attempts a *solo* we cannot praise his song; but when he performs in *concert*, which is his chief delight, these notes, although rough in themselves, being intermixed with those of the multitude, have, as it were, all their rough edges worn off, and become harmonious, especially when softened in the air, where the bird chiefly performs. We have this music in perfection, when the whole colony is raised by the discharge of a gun.

Dr. Darwin has remarked, that a consciousness of danger from mankind is much more apparent in Rooks than in most other birds. Any one who has in the least attended to them, will see that they evidently distinguish that the danger is greater when a man is armed with a gun, than when he has no weapon with him. In the spring of the year, if a person happen to walk under a rookery with a gun in his hand, the inhabitants of the trees rise on their wings, and scream to the unfledged young to shrink into their nests from the sight of the enemy. The country-people, observing this circumstance so uniformly to occur, assert that Rooks can smell gunpowder.

In England these birds remain during the whole year; and both in France and Silecia they migrate.

THE JACKDAW.

Jackdaws are common birds in England, where they remain during the whole year; but in some parts of the Continent they are migratory.

JACKDAW.

They frequent old towers and ruins in great flocks, where they construct their nests; and they have been sometimes known to build in hollow trees, near a rookery, and to join the Rooks in their foraging parties. In some parts of Hampshire, from the great scarcity of towers or steeples, they are obliged to form their nests under-ground, in the Rabbit-holes; they also build in the interstices between the upright and cross stones of Stonehenge, far out of the reach of the shepherd-boys, who are always idling about that place. In the Isle of Ely,

from the want of ruined edifices, they often build their nests in chimneys. In the grate below one of these nests, which had not been used for some time, a fire was lighted; the materials of the nest caught fire, and they were in such quantity, that it was with great difficulty the house could be preserved from the flames.

These birds feed principally on worms, and the grubs of insects; but I was once witness to a very singular deviation from their usual mode in this respect. I was walking with a friend in the Inner Temple garden, about the middle of May, 1802, when we observed a Jackdaw hovering, in a very unusual manner, over the Thames. A small barrel was floating near the place, a buoy to a net that some fishermen were hauling; and we at first thought the bird was about to alight upon it. This, however, proved a mistake; for he descended to the surface of the water, and fluttered for a few seconds with his bill and feet immersed; he then rose, flew to a little distance, and again did the same; after which he made a short circuit, and alighted on a barge, about fifty yards from the garden, where he devoured a small fish. When this was done, he made a third attempt, caught another, and flew off with it in his mouth.

Jackdaws are easily tamed; and may, with a little difficulty, be taught to pronounce several words. They conceal such parts of their food as they cannot eat; and often along with it, small pieces of money or toys, frequently occasioning, for the moment, suspicions of theft in persons who are innocent. They may be fed on insects, fruit, grain, and small pieces of meat.

In Switzerland there is found a variety of Jackdaws which has a white ring round its neck. In Norway, and other cold countries, Jackdaws have been seen entirely white.

THE JAY.

This beautiful bird is well known in our woods; it builds, in trees, an artless nest, of sticks, fibres, and twigs, in which it lays five or six eggs. Its delicate cinnamon-colored back and breast, with blue wing coverts, barred with black and white, render it one of the most elegant birds produced in this country. Its bill is black, and chin white; and, on its forehead, there is a beautiful tuft of white feathers, streaked with black, which it has the power of erecting at pleasure. Its voice is harsh, grating, and unpleasant.

THE JAY.

When kept in a domestic state, the Jay may be rendered familiar, and it will catch and repeat a variety of sounds. One of these birds has been heard to imitate so exactly the noise made by the action of a saw, as to induce passengers to suppose that a carpenter was at work in the house.

A Jay kept by a person in the north of England, had learned at

the approach of cattle, to set a Cur-Dog upon them, by whistling and calling him by his name. One winter, during a severe frost, the Dog was by this means excited to attack a Cow, that was big with Calf; when the poor animal fell on the ice, and was much hurt. The Jay was complained of as a nuisance, and its owner was obliged to destroy it.

The young Jays continue with the old ones till the next pairing time; they then choose each its mate, and separate, in order to produce a new progeny. The old birds, when enticing their fledged young-ones to follow them, make a noise not unlike the mewing of a Cat.

These birds feed in general on acorns, nuts, seeds, and fruit; and in summer they are often found injurious to gardens, from their devouring peas and cherries. Mr. Wallis, in his Natural History of Northumberland, says, "They come two or three together out of the wood into my little garden at Simonburn, in the raspberry and gooseberry season, and can hardly be frightened away; in loud clamors, from tree to tree, proclaiming it (as it were) to be their own property."

So habitual is the sentinel cry of alarm, and so expressive, that all the birds within call, as well as other wild animals, are instantly on the alert, so that the fowler and hunter become generally disappointed of their game by his garrulence and noisy propensity; he is therefore for his petulance, frequently killed without pity or profit, as his flesh, though eaten, has but little to recommend it. His more complaisant notes, when undisturbed, though guttural and echoing, are by no means unpleasant, and fall in harmoniously with the cadence of the feathered choristers around him, so as to form a finishing part to the general music of the grove. His accents of blandishment, when influenced by the softer passions, are low and musical, so as to be scarcely heard beyond the thick branches where he sits concealed; but, as soon as discovered, he bursts out into notes of rage and reproach, accompanying his voice by jerks and actions of temerity and defiance. Indeed the Jay of Europe, with whom our beau agrees entirely in habits, is so irrascible and violent in his movements, as sometimes to strangle himself in the narrow fork of a branch from which he has been found suspended.

In times of scarcity he falls upon carrion, and has been known to venture into the barn, through accidental openings; when as if sensible of the danger of purloining, he is active and silent, and if surprised, postponing his garrulity, he retreats with noiseless precipitation, and with all the cowardice of a thief. The worst trait of his appetite, however, is his relish for the eggs of other birds, in quest of which he may frequently be seen prowling, and with a savage cruelty he sometimes also devours the callow young, spreading the plaint of sorrow and alarm wherever he flits. The whole neighboring community of little birds, assembled at the cry of distress, sometimes, however, succeed in driving off the ruthless plunderer, who not always content with the young, has been seen to attack the old, though with dubious success; but to the gallant and quarrelsome King-bird, he submits like a coward, and driven to seek shelter, even

on the ground, from the repeated blows of his antagonist, sneaks off, well contented to save his life.

THE MAGPIE.

Like the Crow, this bird feeds on almost all substances animal as well as vegetable, that come in its way. It forms its nest with great art; leaving a hole in the side for admittance, and covering the whole upper part with a texture of thorny branches closely entangled, by which a retreat is secured from the rude attacks of other birds; the inside is furnished with a sort of mattress, composed of wool and other soft materials, on which the young-ones, which are generally seven or eight in number, repose.

MAGPIE.

It is a crafty, and, in a tame state, a familiar bird; and may be taught to pronounce not only words, but short sentences, and even to imitate any particular noise that it hears.

Plutarch relates a singular story of a Magpie belonging to a barber at Rome. This bird could imitate, to a wonderful extent, almost every noise that it heard. Some trumpets happened one day to be sounded before the shop; and for a day or two afterwards the Magpie was quite mute, and seemed pensive and melancholy. This surprised all who knew it; and they supposed that the sound of the trumpets had so stunned the bird, as to deprive it at the same time both of voice and hearing. This, however, was not the case; for, says this writer, the bird had been all the time occupied in profound meditation, and was studying how to imitate the sound of the trumpets: accordingly, in the first attempt, it perfectly imitated all their repetitions, stops and changes. This new lesson, however, made it entirely forget every thing that it had learned before.

In certain districts of Norway, the Magpie is so uncommon a bird, that its appearance is considered a sign of the approaching death of some principal person in the neighborhood. In England also it is esteemed a bird of omen. In the north of England, if one of these birds be observed flying by itself, it is accounted by the common people to

be a sign of ill luck: if there be two together, they forebode something fortunate: three indicate a funeral: and four a wedding.

TAME MAGPIE.

Like the other birds of its tribe, the Magpie is addicted to stealing; and, when it is satiated, will hoard up its provisions. It frequently commits ravages in Rabbit-warrens and poultry-yards, by killing the young animals, and destroying the eggs. It may be caught by means of a steel trap baited with a Rat or a dead bird.

THE RED-LEGGED CROW.

The color of this Crow is a fine blue or purple black; and its bill and legs are of a bright and deep orange.

RED-LEGGED CROW, OR CHOUGH.

These birds, which are partial to rocky and mountainous habitations, are not very common in any part of the world. In England they frequent some places in Cornwall and North Wales, inhabiting cliffs and ruinous castles along the shores. A few are found on Dover Cliff, where they came entirely by acci

dent: a gentleman in the neighborhood received from Cornwall, a pair, which escaped, and stocked those rocks. They are not constant to their abode; but frequently, in the course of the year, desert the place for a week or ten days at a time.

The Red-legged Crow is a very tender bird, of elegant form and unable to bear severe weather. Active, restless, and meddling, it is not to be trusted where things of consequence lie. It is much taken with glittering objects; and is apt to snatch up bits of lighted sticks, so that instances have occurred of houses having been set on fire by it. The injury that it does to thatched houses is sometimes very great, for, tearing holes into them with its long bill, in search of worms and insects, the rain is admitted, and quickens their decay. It also often picks out lime from walls, in search of spiders and flies.

These birds commonly fly very high, and they make a more shrill noise than the Jackdaw. The Cornish peasantry attend so much to them, that it is very common to see them tame in their gardens. They shriek out aloud at the appearance of any thing strange or frightful; but, when applying for food, or desirous of pleasing those who usually fondle them, their chattering is very soft and engaging.

When tame, they are very docile and amusing; and they are extremely regular to their time of feeding. But, however familiar they may be to their immediate friends, they will not permit a stranger to touch them.

Their nests are built about the middle of the cliffs, or in the most inaccessible parts of ruins. The eggs, which are four or five in number, are somewhat longer than those of the Jackdaw, and of a cinereous white color, marked with irregular dusky blotches. From their being very tender, these birds are seldom seen abroad except in fine weather.

THE CINEREOUS CROW.

This bird is so small as seldom to weigh more than two or three ounces. Its plumage is brown-gray. The feathers are long, soft, and silky, and in general so much unwebbed, as, in many parts of the body, to resemble hair.

The Cinereous Crow, which is a native of North America, and is extremely common in the neighborhood of Hudson's Bay, is a very familiar bird, and is fond of frequenting habitations, either houses or tents. But so much is it given to pilfering, that no kind of provisions it can come at, either fresh or salted, is safe from its depredations. It is so bold as to come into tents, sit on the edge of the kettle when hanging over the fire, and steal victuals out of the dishes.

Few creatures are more troublesome to the hunters than these. They will sometimes follow them a day together: will perch on a tree while the hunter is baiting his martin-traps, and as soon as his back is turned, will go and eat the baits. The Cinereous Crows are easily tamed, but they never live long in confinement.

The care that this bird takes in laying up in summer a stock of

fruit for winter provision, when no fruit is to be had abroad, is a remarkable instance of foresight in the bird tribe. Its nest is built in trees, and is not unlike the nest of the Blackbird and Thrush. The female lays four blue eggs, but seldom hatches more than three young ones. These birds breed early in the spring. They sometimes steal flesh, but never eat it, feeding principally on fruit, moss, and worms.

THE HOODED CROW

The Hooded Crow, otherwise called the Royston Crow or the Grey Crow, is rather a scarce bird in the British Islands, although scattered over nearly every portion of Great Britain, even including Scotland.

HOODED CROW.

It is one of the winter visitors to England, generally leaving there about April, although it sometimes remains during the summer, and brings up a brood of young. Like most of its congeners, it builds its nest on the tops of very tall trees, such as the pine, but is also known to build on precipitous rocks. It is said to use these rocks in the stead of an oyster-knife, for as it is very fond of Oysters, and does not possess a knife to open them with, it must discover some other method of getting at the enclosed animal. To attain this purpose, it is said to seize the Oyster in its beak, soar up to a great height in the air, and to let the Oyster drop from that elevation upon the hard rock, when the shell is dashed to pieces, and the Crow is enabled to pick out the animal with ease.

There is but little of the usual Corvine black hue about this bird, only the head, throat, wings and tail being so decorated, the remainder of the bird being of an ashy grey. The length of the bird is about twenty-two inches.

OF THE ORIOLES IN GENERAL.

THE characteristics of this tribe are, a straight, conic, sharp-pointed bill; with the mandibles equal in length, and the edges sharp and inclining inward. The nostrils are small: they are situated at the base of the bill, and are partly covered. The tongue is cleft at the end. The toes stand three forward and one backward, and the middle one is joined near the base to the outer toe.

This is a noisy, gregarious, and voracious race; and is confined almost exclusively to America. Most of the species form pendulous nests. upon the exterior branches of trees, which secure them from rapacious animals. Several nests are constructed on one tree. The Orioles in general feed on fruit, but some of them subsist on insects and grain.

THE RED-WINGED ORIOLE.

This bird is about the size of a Starling, being nearly nine inches long. The bill is black, and almost an inch in length. The whole body is of a deep black color: except the upper part of the wings, which is of a full red. The legs are black.

RED-WINGED, OR BALTIMORE ORIOLE.

In some parts of America these birds occasionally appear in such immense flocks, that frequently at one draw of a net more than three hundred are caught. They feed on insects, wheat, and maize; and are exceedingly destructive to the grain. Their common name in America is *Maize-thief:* they seldom attack the maize except just after it is sown, or when the ear becomes green: then, pecking a hole in the side, the rain is

admitted, and the grain spoiled. They are supposed to do this in search of insects. The farmers sometimes attempt their destruction, by steeping the maize before it is sown, in a decoction of white hellebore: the birds that eat this prepared corn, are seized with a vertigo, and fall down stupified. They are so bold and voracious, that a flock of them may frequently be shot at two or three times before they can be driven off; indeed it often happens, that during the second loading of the gun their number increases.

Catsby informs us, that in Carolina and Virginia, these birds breed in swampy places, among the rushes; the points of which they weave so as to form a sort of roof or shed, under which they build their nest, at so judicious a height, that it can never be reached even by the highest floods. Dr. Latham states, that they build between the forks of trees, three or four feet from the ground, in swamps which are seldom penetrable by man.

They are easily caught in traps; and can, without difficulty, be rendered tame, and even taught to speak. They are fond of singing; and are exceedingly playful, either when confined or when suffered to run about the house. With the liveliness and familiarity which they possess, it is said to be highly diverting to place these birds before a looking-glass, and observe their strange and whimsical gesticulations: sometimes they erect the feathers of the head, and hiss at the image; then, lowering their crest, they set up their tail, quiver their wings, and strike at it with their bills. Whether taken young or old, they become immediately tame. It is not unusual to keep them in cylindrical cages with bells; and these cages they turn round in the same manner as Squirrels do. But when they have been confined in a cage for some years, they are said to become white, and so stupid and inanimate, as at last not to be able to feed themselves.

THE ICTERIC ORIOLE, AND WEAVER ORIOLE.

The cteric Oriole is, in size, somewhat smaller than a Blackbird: of a tawny color, with the head, throat, back, quill, and tail-feathers black. The wings have each a white spot.

ICTERIC ORIOLE.

It is a native of Carolina and Jamaica.

The chief food of the Icteric Oriole consists of insects; and, for the purpose of killing these, the Americans domesticate and keep this bird in their houses. It hops about in a similar manner to the Magpie; and has many other gestures of that bird. Albin states, that, in all its actions, it resembles the Starlings; and adds, that sometimes four or five of them will unite to attack a larger bird, which, after they have killed, they eat in a very orderly manner, each choosing his part according to his valor. In a wild state the

Icteric Orioles are so fierce and bold, that, when disturbed, they will attack even mankind; but, when introduced into our society, they are said to be easily tamed.

Their nests are constructed in a cylindrical form; several on the same tree, and suspended from the extremity of the branches, where they wave freely in the air. In these situations they are far out of the reach of such animals as would otherwise destroy the young-ones. Several other species construct their nests in a similar manner.

THE WEAVER ORIOLE

This bird is of a yellow color; the head is brown, with a golden shade, and the quill and tail-feathers are blackish, edged with orange. It is chiefly found in Senegal, and some other parts of Africa.

Of two females of the *Weaver Oriole*, which were brought some years ago from Senegal to England, it was observed, that, being kept together in a cage, they entwined among the wires some of the stalks of the pimpernal, with which they were fed. As this seemed to show a disposition for forming a nest, some rushstalks were put into the cage. Of these they presently made a large nest; but it was as often deranged as made, the work of one day being spoiled the next. This seemed to prove that the fabrication of the nest in a state of nature, is the work of both male and female, and that the female is not able to finish this important structure by herself.

A bird of this species having, by accident, obtained a thread of sewing-silk, wove it among the wires of its cage; and, on being supplied with more, it interlaced the whole very confusedly, so as to prevent most part of that side of the cage from being seen through. It was found to prefer green and yellow silks to those of any other color.

OF THE BIRDS OF PARADISE IN GENERAL.

THE Birds of Paradise have their bills slightly bent, and the base clad with velvet-like feathers. The nostrils are small, and covered The tail consists of ten feathers; the two middle ones of which, in several of the species, are very long, and webbed only at the base and tips. The legs and feet are large and strong; having three toes forward and one backward, and the middle toe connected to the outer one as far as the first joint.

No class of birds has given rise to more fables than this. By different writers we are taught to understand that they never touch the ground, from the time of their exclusion from the egg, to their death; that they live wholly on *dew*, and that they are produced without legs; that, when they sleep, they hang themselves by the two long feathers of the tail, to the branch of a tree; that the female produces her eggs in the air, which the male receives in an orifice in his body, where it is hatched; and a thousand other stories that are too absured even to be mentioned.

The whole race, as far as we are at present acquainted with them, are natives of New Guinea, whence they migrate into the neighboring islands. Their plumage is in general of extremely brilliant colors.

THE GREATER BIRD OF PARADISE.

The general color of these birds is chestnut, with the neck of a gold-green beneath. The feathers of the back and sides are considerably longer than those of the body. They have two long tail-feathers, which are straight and taper to the tip.

GREATER BIRD OF PARADISE.—FEMALE.

There are two varieties of this species, both of which inhabit the islands of Arrou. They are supposed to breed in New Guinea, and to reside there during the wet monsoon; but they retire to the Arrou islands, about a hundred and forty miles eastward, during the dry or western monsoon.

They always migrate in flocks of thirty or forty, and have a leader, which the inhabitants of Arrou call the king. He is said to be black, to have red spots, and to fly far above the flock, which never desert him, but always settle in the same place that he does. They never fly with the wind, as in that case their loose plumage would be ruffled and blown over their heads; and a change of wind often compels them to alight on the ground, from which they cannot rise without difficulty. When surprised by a heavy gale, they soar to a higher region, beyond the reach of the tempest. There, in a serene sky, they float at ease on their light flowing feathers, or pursue their journey in security. During their flight they cry like Starlings; but, when a storm blows in their rear, they express their distressed situation by a note somewhat resembling the croaking of a Raven. In calm weather, great numbers of these birds may be seen flying, both in companies and singly, in pursuit of the larger butterflies and other insects on which they feed. They never willingly alight, except on the highest trees.

GREATER BIRD OF PARADISE.—MALE.

Their arrival at Arrou is watched by the natives, who either shoot them with blunt-arrows, or catch them by means of bird-lime or in nooses. When caught, they make a vigorous resistance, and defend themselves stoutly with their beaks. After being killed, the entrails and breast-bone are taken out, and they are dried with smoke and sulphur, for exportation to Banda, where they are sold for half a rix-dollar each. Thus prepared, they are sent to all parts of India and Persia, to adorn the turbans of persons of rank, and even the trappings of the horses. Not long ago, they formed an additional ornament to the head-dresses of the British fair.

THE SUPERB BIRD OF PARADISE.

THE SUPERB BIRD OF PARADISE.

In this species the scapulary feathers form a long spreading plume which can be elevated at pleasure, and there are two pointed lappets on the chest; with the exception of these latter, which are of the most brilliant burnished steel-green, the color of the plumage is velvet-black, iridescent with green and violet, length nine inches.

THE GOLDEN BIRD OF PARADISE.

The general color of this species is velvety-black; the tops of the head is clothed with a greyish crest, and each side of the occiput is ornamented with three long slender shafts, ending in a small oval vane; back of the neck changeable golden-green; flanks covered with black loose, long feathers, covering the wings and hiding the tail, and capable of being raised up obliquely. Feathers of the throat large and scale-shaped, bordered with reflecting green and gold; tail-feathers velvety, with some long floating filaments. Length, about eleven inches.

GOLDEN BIRD OF PARADISE.

THE MAGNIFICENT BIRD OF PARADISE.

This beautiful bird is of an orange-chestnut above, deeper on the top of the head and back, and sometimes inclining to purple; the tips of the wings and tail are brown; the throat is blackish, with a purple gloss; the breast and under parts are covered with scaled-shape feathers of a deep changeable golden-green, with a blue reflection down the breast. From back of the neck springs a double ruff, composed of slender plumes, with slightly dilated extremities. The wing-coverts are orange-colored, with transverse blackish crescents; from the tail-coverts spring two long slender shafts of golden-green.

THE MAGNIFICENT BIRD OF PARADISE.

THE KING BIRD OF PARADISE.

This rare species, one of the very smallest of the group, is a native of the Moluccas. It is about the size of a sparrow. Its upper plumage is intense purplish chestnut; a zone of golden-green extends across the chest; from each side under the shoulder springs a fan-like plume of six or seven dusky feathers, tipped with the richest golden-green. From the tail spring two long slender shafts, each elegantly terminating in a broad emerald web, rising from one side only of the shaft, and disposed into a flat curl; under parts of the body, white. In its habits this species is said to be solitary, feeding on fruits and berries.

OF THE CUCKOO TRIBE IN GENERAL.

THESE birds have their bill weak, and more or less bending. The nostrils are bounded by a small rim; and the tongue is short and pointed. The toes are situated two forward and two backward. The tail is wedge-shaped, and consists of ten soft feathers.

The different species of Cuckoos are scattered through the four quarters of the globe, but they are much more common in the hot than in temperate or cold climates. One species only is found in Great Britain.

THE COMMON CUCKOO.

The Cuckoo is about fourteen inches in length, and twenty-five in breadth. The bill is black, strong, and somewhat curved. The upper parts of the plumage are chiefly of a dove-color; the throat is pale grey; and the breast and belly are white, crossed with undulated lines of black. The vent feathers are of a buff-color, marked with a few dusky spots. The two middle tail feathers are black, tipped with white. The plumage of the young birds is chiefly brown, mixed with ferruginous and black.

COMMON CUCKOO.

The Cuckoo visits us early in the spring. Its well-known cry is generally heard about the middle of April, and ceases about the end of June: its stay is short, the old Cuckoos being said to quit this country early in July. These birds are generally supposed to build no nest; but, what is also extraordinary, the female Cuckoo deposits her solitary egg in the nest of another bird, by which it is hatched. The nests she chooses for this purpose are generally those of the Hedge-Sparrow, Water-Wagtail, Titlark, Yellow-Hammer, Green Linnet, or

Winchat: but of these it has been observed, that she shows the greatest partiality to the nest of the Hedge-Sparrow.

We are indebted to the observations of Dr. Jenner, for the following account of the habits and economy of this singular bird, in the disposal of its egg. He states that, during the time the Hedge-Sparrow is laying her eggs, which generally occupies four or five days, the Cuckoo contrives to deposit her egg among the rest, leaving the future care of it entirely to the Hedge-Sparrow. This intrusion often occasions some disorder; for the old Hedge-Sparrow, at intervals, while she is sitting, not only throws out some of her own eggs, but sometimes injures them in such a way, that they become addle, so that it frequently happens, that not more that two or three of the parent-bird's eggs are hatched: but, what is very remarkable, it has never been observed that she has either thrown out or injured the egg of the Cuckoo. When the Hedge-Sparrow has set her usual time, and has disengaged the young Cuckoo and some of her own offspring from the shell, her own young-ones, and any of her eggs that remain unhatched, are soon turned out: the young Cuckoo then remains in full possession of the nest, and is the sole object of the future care of the foster-parent. The young birds are not previously killed, nor are the eggs demolished; but they are left to perish together, either entangled in the bush that contains the nest, or lying on the ground beneath it. On the 18th of June, 1787, Dr. Jenner examined a nest of a Hedge-Sparrow, which then contained a Cuckoo's and three Hedge-Sparrow's eggs. On inspecting it the day following, the bird had hatched: but the nest then contained only a young Cuckoo and one young Hedge-Sparrow. The nest was placed so near the extremity of a hedge, that he could distinctly see what was going forward in it; and, to his great astonishment, he saw the young Cuckoo, though so lately hatched, in the act of turning out the young Hedge-Sparrow. The mode of accomplishing this was curious; the little animal, with the assistance of its rump and wings, contrived to get the bird upon its back, and, making a lodgment for its burden by elevating its elbows, climbed backward with it up the side of the nest, till it reached the top; where, resting for a moment, it threw off its load with a jerk, and quite disengaged it from the nest. After remaining a short time in this situation, and feeling about with the extremities of its wings, as if to be convinced that the business was properly executed, it dropped into the nest again. Dr. Jenner made several experiments in different nests, by repeatedly putting in an egg to the young Cuckoo; but this he always found to be disposed of in the same manner. It is very remarkable, that nature seems to have provided for the singular disposition of the Cuckoo, in its formation at this period; for, different from other newly-hatched birds, its back, from the scapulæ downward, is very broad, with a considerable depression in the middle, which seems intended for the express purpose of giving a more secure lodgment to the egg of the Hedge-Sparrow or its young-one, while the young Cuckoo is employed in removing either of them from the nest. When it is about twelve days old, this cavity is quite filled up, the back assumes the shape of that of nestling birds in general, and at that time the dispo-

sition of turning out its companion entirely ceases. The smallness of the Cuckoo's egg, which in general is less than that of the House-Sparrow, is another circumstance to be attended to in this surprising transaction, and seems to account for the parent Cuckoo's depositing it in the nests of such small birds only as have been mentioned. If she were to do this in the nest of a bird that produced a larger egg, and consequently a larger nestling, the design would probably be frustrated; the young Cuckoo would be unequal to the task of becoming sole possessor of the nest, and might fall a sacrifice to the superior strength of its partners.

Dr. Jenner observes, that the eggs of two Cuckoos are sometimes deposited in the same nest: he gives the following instance, which fell under his observation. Two Cuckoos and a Hedge-sparrow were hatched in the same nest; one Hedge-Sparrow's egg remained unhatched. In a few hours a contest began between the Cuckoos for possession of the nest; and this continued undetermined till the afternoon of the following day, when one of them, which was somewhat superior in size, turned out the other, together with the young Hedge-Sparrow, and the unhatched egg. The contest, he adds, was very remarkable: the combatants alternately appeared to have the advantage, as each carried the other several times, nearly to the top of the nest, and again sank down, oppressed by the weight of its burden; till at length, after various efforts, the strongest of the two prevailed, and was afterwards brought up by the Hedge-Sparrow.

No reason can be assigned, from the formation of this bird, why, in common with others, it should not build a nest, incubate its eggs, and rear its own offspring; for it is in every respect perfectly formed for all these offices. To what cause then may we attribute the above singularities? May they not be owing to the following circumstances?—the short residence this bird makes in the country where it is destined to propagate its species, and the necessity that exists of its producing, during that short residence, a numerous progeny. The Cuckoo's first appearance in England, is about the middle of April: its egg is not ready for incubation till some weeks after its arrival, seldom before the middle of May. A fortnight is taken up by the sitting bird in hatching the egg. The young bird generally continues three weeks in the nest before it can fly, and the foster-parents feed it more than five weeks after this period; so that, if a Cuckoo should be ready with an egg much sooner than the time pointed out, not a single nestling would be fit to provide for itself before its parent would be instinctively directed to seek a new residence, and be thus compelled to abandon its offspring; for the old birds take their final leave of this country the first week in July.

"There seems (says Dr. Jenner) no precise time fixed for the departure of young Cuckoos. I believe they go off in succession, probably as soon as they are capable of taking care of themselves; for although they stay here till they become nearly equal in size, and in growth of plumage, to the parent, yet in this very state the fostering care of the Hedge-Sparrow is not withdrawn from them. I have frequently seen the young Cuckoo of such a size, that the Hedge-Sparrow has perched

on its back, or on its half-expanded wing, in order to gain sufficient elevation to put the food into its mouth. At this advanced age it is probable that the young Cuckoos procure some food for themselves; like the young Rook, for instance, which in part feeds itself, and is partly fed by the old ones, till the approach of the pairing season."

The same instinctive impulse which directs the Cuckoo to deposit her eggs in the nests of other birds, directs her young-one to throw out the eggs and young of the owner of the nest. The scheme of nature would be incomplete without it; for it would be difficult, if not impossible, for the birds destined to find nourishment for the Cuckoo, to find it also for their own young-ones, after a certain period; nor would there be room for them all to inhabit the nest.

The above are certainly well-attested instances of the Cuckoo's laying its eggs in the nests, and trusting its young to the protection of other birds; but there are instances, equally well attested, of their hatching and feeding their own nestlings. The Rev. Mr. Stafford, one day walking in Blossopdale, in Derbyshire, saw a Cuckoo rise from its nest; which was on the stump of a tree that had been some time felled. In this nest there were two young Cuckoos; one of which he fastened to the ground by a peg and line; and, for many days beheld the old Cuckoo feed them. Mr. Daines Barrington, who recorded this account, had been informed of two other instances of Cuckoo's nests, in which the proper parents fed their young; the one within four miles of London, and the other on the south-west coast of Merionethshire.

It has been conjectured by some persons, that, during winter, the Cuckoo remains in England, hidden in hollow trees, and in a torpid state. In support of this opinion, Mr. Willoughby, in his Ornithology, relates the following story: "The servants of a gentleman in the country, having stocked up, in one of the meadows, some old, dry, rotten willows, thought proper, on a certain occasion, to carry them home. In heating a stove, two logs of this timber were put into the lower part, and fire was applied as usual. But soon, to the surprise of the family, was heard the voice of a Cuckoo, chirping three times from under the stove. Wondering at so extraordinary a cry in winter-time, the servants drew the willow logs from the furnace, and in the midst of one of them they saw something move; when, taking an axe, they opened the hole, and, thrusting in their hands, first they plucked out nothing but feathers; afterwards they got hold of a living animal, and this was the Cuckoo that the fire had awaked. It was, indeed, (continues our historian,) brisk and lively, but wholly naked and bare of feathers, and without any winter provision in its hole. This Cuckoo the boys kept two years afterwards alive in the stove; but whether it repaid them with a second song, the author of the tale has not thought fit to inform us."

A few years ago a young Cuckoo was found, in a torpid state, in the thickest part of a furze bush. When taken up, it soon exhibited signs of life, but was quite destitute of feathers. Being kept warm, and carefully fed, it grew and recovered its coat. In the ensuing spring it made its escape; and, in flying across the river Tyne, was heard to give its usual call.

It would be wrong to assert as a general fact, that Cuckoos remain torpid in England during winter, because half a dozen (or perhaps not so many) instances are recorded of their having been found in this state. We are much rather led to suppose, that these accidental occurrences have arisen from their being young birds, which had not been strong enough to leave us at the usual time of migration, and which had therefore sought for shelter and warmth in the places where they have been discovered.

It is supposed that there are more male Cuckoos than females: Mr. Pennant observes, that five male birds were caught in a trap in one season; and Dr. Latham says, that out of about half a dozen that he had examined, chance never directed him to a female. The males alone being vocal, may, however, be one cause why our specimens are chiefly of this sex; their note directing the gunner to take aim, whilst the female is secured by her silence.

The young birds, though helpless and foolish for a great length of time, may be, and often are, brought up tame, so as to become familiar. In this state they will eat bread and milk, fruits, insects, eggs, and flesh either cooked or raw; but in a state of nature, they are supposed to live principally on Caterpillars. When fat, they are said to be as good eating as the Land-rail.

THE BEE CUCKOO, OR MOROC.

The Bee Cuckoo, in its external appearance, does not much differ from the common Sparrow: except that it is somewhat larger, and of a lighter color: it has also a yellow spot on each shoulder, and the feathers of its tail are dashed with white.

To this bird is ascribed the faculty of discovering and pointing out to man, and to the quadruped called the Ratel, the nests of wild Bees. It is itself exceedingly fond both of honey, and of the Bee-maggots; and it knows that when a nest is plundered, some of the honey must fall to the ground, which consequently comes to its share; but, in general, a part is purposely left by the plunderers, as a reward for its services. The way in which this bird communicates to others the discovery it has made, is as surprising as it is well adapted to the purpose.

The morning and evening are its principal meal-times; at least, it is then that it shows the greatest inclination to come forth, and with a grating cry of *cheer, cheer, cheer*, to excite the attention of the Ratel, as well as of the Hottentots and colonists, of whose country it is a native. Somebody then generally repairs to the place whence the sound proceeds; when the bird, continually repeating its cry of *cheer, cheer, cheer*, flies on slowly, and by degrees, towards the quarter where the swarm of Bees has taken up its abode. The persons thus invited accordingly follow; taking care at the same time not to frighten their guide by any unusual noise, but rather to answer it now and then with a soft and gentle whistle, by way of letting the bird know that its call is attended to. When the Bees' nest is at some distance, the bird often makes long stages or flights, waiting for its sporting com-

panions between each flight, and calling to them again to come on; but it flies to shorter distances, and repeats its cry more frequently and with greater earnestness, in proportion as they approach nearer to the nest. When the bird has sometimes, in consequence of its great impatience, got too far ahead of its followers, but particularly when, on account of the unevenness of the ground, they have not been able to keep pace with it, it has flown back to meet them, and with redoubled cries has denoted still greater impatience, upbraiding them, as it were, for being so tardy. When it comes to the Bees' nest, whether built in the cleft of a rock, in a hollow tree, or in some cavity of the earth, it hovers over the spot for a few seconds; after which it sits in silence, and for the most part concealed, in some neighboring tree, or bush, in expectation of what may happen, and with a view of receiving its share of the booty. It is probable that this bird always hovers, more or less, in the manner just mentioned, over the Bees' nest, before it hides itself; though the people do not always pay attention to this circumstance: at all events, however, one may be assured that the Bees' nest is very near, when, after the bird has guided its followers to some distance, it is on a sudden silent.

BEE CUCKOO.

Having, in consequence of the bird's directions, found and plundered the nest, the hunters, by way of acknowledgment, usually leave to the bird a considerable share of that part of the comb in which the young Bees are hatching; and which is probably to it the most acceptable morsel.

The above account of Dr. Sparrman has undergone some severe though ill-natured animadversions, from the pen of Mr. Bruce. I shall insert them in his own words. "I cannot (he says) conceive that, in a country where there are so many thousand hives there was any use for giving to a bird a peculiar instinct or faculty of discovering honey, when, at the same time, nature hath deprived him of the

power of availing himself of any advantage from the discovery; for man seems in this case to be made for the service of the Moroc, which is very different from the common or ordinary course of things: man certainly needs not this bird; for on every tree and on every hillock he may see plenty of honey at his own deliberate disposal. I cannot then but think, with all submission to these natural philosophers, (Dr. Sparrman, and Jerome Lobo, who has also given an account of this bird,) that the whole of this is an improbable fiction: nor did I ever hear a single person in Abyssinia suggest, that either this, or any other bird, had such a property. Sparrman says it was not known to any inhabitant of the Cape, any more than that of the Moroc was in Abyssinia; it was a secret of nature, hid from all but these two great men, and I most willingly leave it among the catalogue of their particular discoveries."

Dr. Sparrman says, that a nest which was shown to him as belonging to this bird, was composed of slender filaments of bark, woven together in the form of a bottle: the neck and opening hung downwards; and a string, in an arched shape, was suspended across the opening, fastened by the two ends, perhaps for the bird to perch on.

Mr. Barrow, who in the years 1797 and 1798 travelled into the interior of the southern extremity of Africa, fully confirms the truth of Dr. Sparrman's account. He says, that every one there is too well acquainted with the Moroc to have any doubt as to the certainty, either respecting the bird, or its mode of giving information concerning the repositories of the Bees. He tells us further, that it indicates to the inhabitants with equal certainty, the dens of Lions, Tigers, Hyænas, and other beasts of prey and noxious animals. M. Le Vaillant says that the Hottentots are very partial to the Moroc, on account of the service it renders them; and that, once, when he was about to shoot one, they on that account begged him to spare its life.

OF THE WOODPECKERS IN GENERAL.

THE bill is straight, strong, and angular; and at the end, in most of the species, is formed like a wedge, for the purpose of piercing the trees. The nostrils are covered with bristles. The tongue is very long, slender, cylindrical, bony, hard, and jagged at the end. The toes are placed two forward, and two backward; and the tail consists of ten hard, stiff, and sharp-pointed feathers.

The Woodpeckers are a very singular race of birds, that live almost entirely on insects, which they pick out of decayed trees, and from the bark of such as are sound. These they transfix and draw from the crevices by means of their tongue, which is bony at the end, barbed, and furnished with a curious apparatus of muscles, for the purpose of throwing it forward with great force. Their bill is also so strong and powerful, that by means of it they are able to perforate even such trees as are perfectly sound. In the holes which they thus make, they construct their nests. Their voice is acute, and very unpleasant.

THE BLACK WOODPECKER.

This bird weighs about eleven ounces. Its plumage is black except the crown of the head, which is of a rich crimson. The head of the female is only marked with red behind.

BLACK WOODPECKER.

It inhabits Switzerland, Germany, and several of the northern regions; and is migratory. It is also quite common in this country.

The Black Woodpecker subsists on insects, which it catches on the bark of trees, or between the bark and the wood. It darts out its long tongue, sometimes three or four inches beyond its bill, transfixes the insects with the end, and then with a very quick motion retracts it and swallows them. The feathers of the tail are very stiff; and so firmly set into the rump, that, when the bird has fastened its claws into the inequalities of the bark, he places his strong tail-feathers against it, and thus standing as it were erect, forms a hole by means of his bill. He is able to pierce not only sound, but even hard trees, as the oak and hornbeam. The hole thus made is enlarged within, for the greater convenience of depositing its nest. The damage that the Black Woodpecker does to timber by this means is very great.

The female lays two or three white eggs. This bird has a very loud note; and feeds on caterpillars and insects.

THE WHITE-BILLED WOODPECKER.

This species is about the size of a crow. The bill is white, three inches long, and channelled. On the head is a red pointed crest: the head itself and the body in general are black; but the lower part of the back, the rump, and upper tail coverts, are white. From the eye a white stripe arises, and passes, on each side of the neck, down to the back.

The White-billed Woodpecker is found in Carolina, Virginia, and other parts of North America.

The Spanish settlers of South America have given to the White-billed Woodpecker the name of Carpenter, from the noise that it makes with its bill against the trees in the woods. This is heard at a great distance; and when several of these birds are at work together, the sound is not much unlike that proceeding from woodmen or carpenters. This Woodpecker rattles its bill against the sides of the orifice, till even the woods resound. A bushel of chips, a proof of its labors, is often to be found at the foot of the tree. On examination its holes have been generally found of a winding form, the better to protect the nest from the effects of the weather.

The Canadian Indians make a kind of coronet with the bills of these birds, by setting them in a wreath with the points outward; and for this purpose they will purchase them at the rate of two or three buckskins per bill.

THE RED-HEADED WOODPECKER.

This species is about nine inches long. The bill is about an inch and a quarter in length, of a lead color with a black tip. The head and neck are of a most beautiful crimson; the back and wings are black, the rump, breast, and belly, white; the first ten quills are black, the eleventh black and white, and the rest white with black shafts. It inhabits Carolina, Canada, and most other parts of North America; migrating southwards, according to the severity of the weather.

In various parts of America these Woodpeckers are extremely common: and few animals can be more destructive than they are, in maize-fields and orchards. They attack the trees in flocks, and eat so much of the fruit that nothing but the skin is left. In some years they are much more numerous than in others. A premium of four cents per head was formerly paid from the public funds of some of the States, in order, if possible, to extirpate the breed: but this has of late been much neglected.

They remain during the whole year in Virginia and Carolina, but are not seen in such numbers in winter as during summer. In the winter they are very tame; and they are frequently known to come into the houses, in the same manner as the Redbreast does in England.

These Woodpeckers, like the other species, build their nests in holes, which they form in the trees; and it is said that the noise they make with their bills in this operation, may be heard more than a mile. Their flesh is by many people accounted good eating.

THE WRYNECK.

The bill of the Wryneck is roundish, slightly curved, and weak. The nostrils are bare of feathers, and somewhat concave. The tongue is long, slender, and armed at the point. There are are ten flexible feathers in the tail; and the feet are formed for climbing, the toes being placed two backward and two forward. This bird is about the size of a lark, and its plumage consists of different shades of brown, elegantly blended together. The tail-feathers are of a pale ash-color, marked with black and red, and having four equi-distant bars of black.

THE WRYNECK.

This bird (for there is only one ascertained species of its tribe) is well known in most parts of England. In the form of its tongue and toes it resembles the Woodpeckers, but the slenderness of the bill prevents its being arranged amongst them.

The female builds an artless nest in the hole of a tree, and deposits in it eight or ten perfectly white eggs. Dr. Derham informs us, that although these birds are far from being any way terrible, yet when in danger, they have such singular contortions of their neck, and such odd motions with their head, that, when he was a boy, he used to be so much alarmed at them, that he was deterred from either taking their nests or touching the birds, daring no more to venture his hands into their holes, than if a Serpent had lodged in them. The young ones, while in the nest, will also hiss like Snakes; which may afford an additional preventive against the nest being plundered.

Their food consists principally of Ants and other insects, of which they find great abundance lodged in the bark and crevices of trees. They also frequent grass-plots and Ant-hills; into which they dart their tongues, and from which they draw out their prey. Mr. White, in his Naturalist's Calendar, tells us that these are so long as to coil round their heads.

The manners of this species were minutely examined by taking a female from her nest, and confining her in a cage for some days. A quantity of mould, with Ants and their grubs, was given to her; and it was curious to observe the tongue darted forward and retracted, with such velocity, and such unerring aim, that it never returned without either an Ant or a grub adhering to its viscous extremity, and not transfixed by it as is generally supposed. While feeding, the body was altogether motionless; the head only being turned; and the motion of the tongue so rapid, that the grubs, which were of a light color, and were more conspicuous than the tongue, had somewhat the appearance

of moving to the mouth by attraction, as a small particle of iron flies to a magnet. The bill was rarely used, except to remove the mould in order to get more readily at the insects. Where the earth was hollow, the tongue was thrust into the cavities, in order to rouse the Ants: for this purpose the horny extremity is very serviceable, as a guide to it into the interior.

The Wryneck is a solitary bird, never being seen in any other society than that of its own mate: and even this is only transitory; for as soon as the domestic union is dissolved, which is in the month of September, each retires and migrates by itself, and does not return till the ensuing spring. The voice of these birds is very much like that of the smaller species of Hawks. They also sometimes make a noise like a Grasshopper.

OF THE NUT-HATCH TRIBE IN GENERAL.

THE characters of this tribe are, a bill for the most part straight, having, on the lower mandible, a small angle: small nostrils, covered with bristles: a short tongue, horny at the end and jagged: toes placed three forward and one backward; the middle toe joined closely at the base to both the outer; and the back toe as large as the middle one.

In the habits and manners of the different species of Nut-hatch, we observe a very close alliance to the Wood-peckers. Most of them feed on insects; and some on nuts, whence their appellation has been acquired.

THE EUROPEAN NUT-HATCH.

NUT-HATCH.

The length of this bird is five inches and three-quarters. The bill is strong and straight, about three-quarters of an inch long; the upper mandible is black, and the lower white. All the upper parts of the body are of a bluish gray: the cheeks and chin are white; the breast and belly pale orange-color; and the quills dusky. The tail is short; and consists of twelve feathers, the two middle ones of which are gray, the two outer spotted with white, and the rest dusky. The legs are pale yellow; the claws are large, and the back one very strong.

The Nut-hatch, the Squirrel, and the Field-mouse, which all live much on hazel-nuts, have each a curious way of getting at the kernel. Of the two latter, the Squirrel after rasping off the small end, splits the shell in two with his long fore-teeth, as a man does with his knife; the Field-mouse nibbles a hole with his teeth, as regular as if it were drilled with a whimble, and yet so small that one would wonder how the kernel could be extracted through it; while the Nut-hatch picks an irregular ragged hole with his bill; but, as he has no paws to hold the nut firm while he pierces it, he, like an adroit workman, fixes it, as it were in a vice, in some cleft of a tree, or in some crevice; when,

standing over it, he perforates the stubborn shell. On placing nuts in the chink of a gate-post where Nut-hatches have been known to haunt, it has always been found that these birds have readily penetrated them. While at work they make a rapping noise, which may be heard at a considerable distance. Dr. Plott informs us that this bird, by putting its bill into a crack in the bough of a tree, sometimes makes a loud sound, as if the branch were rending asunder. Besides nuts, it feeds also on Caterpillars, Beetles and various other insects.

The female deposits her eggs, six or seven in number, in some hole of a tree, frequently in one that has been deserted by the Woodpecker, or rotten wood mixed with moss. If the entrance be too large, she nicely stops up part of it with clay, leaving only a small hole for herself to pass in and out. While the hen is sitting, if a stick be put into the hole she hisses like a snake; and she is so much attached to her eggs, that she will sooner suffer any one to pluck off the feathers than fly away. During the time of incubation, she is assiduously attended by the male who supplies her with food. If the barrier of plaster at the entrance of the hole be destroyed whilst these birds have eggs, it is speedily replaced; this is a peculiar instinct, to prevent the nest from being destroyed by Woodpeckers and other birds of superior size and strength, which build in similar situations.

The Nut-hatch is supposed not to sleep perched (like most other birds) on a twig; for it has been observed, that when kept in a cage, notwithstanding it would perch now and then, yet at night it generally crept into some hole or corner to sleep: and it is remarkable that when perched, or otherwise at rest, it had mostly the head downward, or at least even with the body, and not elevated like other birds.

These are shy and solitary birds. Like the Woodpeckers they frequent woods, and run up and down the trees with surprising facility. They often move their tail in the manner of the Wagtail. They do not migrate; but, during the winter, they approach nearer to inhabited places, and are sometimes seen in orchards and gardens.

OF THE KINGFISHER TRIBE IN GENERAL.

THE bill is sharp, triangular, long, straight and thick. The tongue is fleshy, short, flat and sharp. The feet, except in a few species, are formed for climbing, with the toes two backward and two forward.

These birds frequent the banks of rivers; living principally on fish, which they catch with great dexterity. They swallow their prey whole but afterwards throw up the indigestible parts. Their wings are short; yet they fly very swiftly.

THE COMMON KINGFISHER.

The length of the Kingfisher is seven inches, and its breadth eleven. The bill is nearly two inches long, and black; but the base of the lower mandible is yellow. The top of the head, and the sides of the body, are of a dark green, marked with transverse spots of blue. The tail is of a deep blue; and the other parts of the body are of a dusky orange, white, and black. The legs are red.

In the beauty and brilliancy of its plumage, the Common Kingfisher far excels all the other species of British birds. Its shape is, however, somewhat inelegant, from the great disproportion there is, in size, between the head and bill, and the other parts of the body.

Its usual prey consists of the smaller kinds of fish. It frequently sits on a branch projecting over the current: there it remains motionless, and often watches whole hours, to catch the moment when a little fish rises to the surface of the water under its station; it dives perpendicularly into the water, where it continues several seconds, and then brings up the fish, which it carries to land, beats to death, and afterwards swallows.

When the Kingfisher cannot find a projecting bough, it sits on some stone near the brink, or even on the gravel; but the moment it perceives the fish, it takes a spring upward, of twelve or fifteen feet, and drops perpendicularly from that height. Often it is observed to stop short in its rapid course, and remain stationary, hovering (in a manner not unlike some of the Hawk tribe) over the same spot for several seconds. Such is its mode in winter, when the muddy swell of the stream, or the thickness of the ice, constrains it to leave the rivers, and ply along the sides of the unfrozen brooks. At each pause it continues, as it were, suspended at the height of fifteen or twenty feet; and, when it would change its place, it sinks, and skims along within a foot of the surface of the water, then rises and halts again. This repeated and almost continual exercise, shows that the bird dives for many small objects, fishes or insects, and often in vain; for in this way it passes over many a league.

"Kingfishers (says Mr. Gmelin) are seen all over Siberia; and their feathers are employed by the Tartars and the Ostiacs for many superstitious uses. The former pluck them, cast them into water, and carefully preserve such as float; and they pretend, that if with one of these feathers they touch a woman, or even her clothes, she must fall in love with them. The Ostiacs take the skin, the bill, and the claws, of this bird, and shut them in a purse; and, as long as they preserve this sort of amulet, they believe that they have no ill to fear. The person who taught me this means of living happy, could not forbear shedding tears; he told me that the loss of a Kingfisher's skin that he had, caused him to lose also his wife and his goods. I observed, that such a bird could not be very rare, since a countryman of his had brought me one, with its skin and feathers; he was much surprised, and said that if he had the luck to find one, he would give it to no person."

M. D'Aubenton was enabled to keep several of these birds for a considerable length of time, by supplying them with small fish, which he put into basins of water, and on which they fed. They refused all other kinds of nourishment.

The Kingfisher lays its eggs, to the number of seven or more, in a hole in the bank of the river or stream that it frequents. Dr. Heysham had a female brought alive to him at Carlisle, by a boy, who said he had taken it the preceding night when sitting on its eggs. His information on the subject was, that "having often observed these birds frequent a bank upon the river Peteril, he had watched them carefully, and at last he saw them go into a small hole in the bank. The hole was too narrow to admit his hand; but, as it was made in soft mould, he easily enlarged it. It was upwards of half a yard long: at the end of it, the eggs, which were six in number, were placed upon the bare mould, without the smallest appearance of a nest." The eggs were considerably larger than those of the Yellow-hammer, and of a transparent white color. It appears from a still later account than this, that the direction of the holes is always upward; that they are enlarged at the end; and have there a kind of bedding formed of the bones of small fish, and some other substances, evidently the castings of the parent animals. This bedding is generally about half an inch thick, and mixed with earth. There is reason to believe, that both male and female come to this spot for no other purpose than to eject the refuse of their food, for some time before the latter begins to lay: and that they dry it with the heat of their bodies; as they are frequently known to continue in the hole for hours, long before the period for laying. On this disgorged matter the female deposits and hatches her eggs. When the young-ones are nearly full-feathered, they are extremely voracious; and the old birds not supplying them with all the food they could devour, they are continually chirping, and may be discovered by their noise.

It was once believed that, when the body of a Kingfisher was suspended by a thread, some magnetic influence always turned its breast to the north. This, however, is as fabulous as the tradition, that it will preserve woolen cloth from the depredations of Moths.

The Belted Kingfisher is an American variety of this bird.

THE BELTED KINGFISHER.

OF THE CREEPER TRIBE IN GENERAL.

THE bills of these birds are curved, slender, and pointed. The tongue is generally sharp, fringed, or tubular. The legs are strong, and formed with three toes forward.

The Creepers are dispersed through most countries of the globe. They feed chiefly on insects, in search of which they run up and down the stems and branches of trees. Most of the species breed in hollows of trees, where they lay many eggs.

THE COMMON CREEPER, AND RED CREEPER.

The bill of the Common Creeper is hooked; and its legs are slender, with the claws very long, to enable it to creep up and down the bodies of trees in search of insects. Its color is a mixed gray, with the under parts white. The quill-feathers of the wings are brown, and several of them are tipped with white. The tail is long, and consists of twelve stiff feathers.

CREEPERS.

It is found both in Europe and Asia; and is also very common in some parts of North America, particularly in the neighborhood of Philadelphia.

Except the Humming-bird, this is the smallest of all the feathered tribes; its weight being no more than five drachms. The length of its feathers, and the manner that it has of ruffling them, give it, however, an appearance much beyond its real size. It is a bird which seems peculiarly fond of the society of man; and in some parts of the world it is often protected by his interested care. From observing its utility in destroying insects, it has long been a custom, with the inhabitants of many parts of the United States, to fix a small box at the end of a long pole, in gardens and about houses, as a place for it to build in. In these boxes the animals form their nests, and hatch their young-ones; which the parent birds feed with a variety of different insects, particularly those species that are injurious in gardens. A gentleman, who was at the trouble of watching these birds, observed that the parents generally went from the nest and returned with insects from forty to sixty times in an hour, and that, in one particular hour, they carried food no fewer than seventy-one times. In this business they were engaged during the greatest part of the day. Allowing twelve hours to be thus occupied, a single pair of these birds would destroy at least six hundred insects in the course of one day, on the supposition that the two birds took only a single insect each time. But it is highly probable that they often took more.

I suspect that this is the bird which Mr. St. John, in his Letters of an American farmer, has called a *Wren*, and of which he records the following story.—Three birds had built their nests almost contiguous to each other. A Swallow had affixed hers in the corner of a piazza next his house; a bird which he calls a Phebe in the other corner; and a Wren possessed a little box, which he had made on purpose, and hung between. These were all quite tame. The Wren had for some time, shown signs of dislike to the box which had been given to it, though it was not known on what account. At length, however, small as it was, it resolved to drive the Swallow from its habitation; and, astonishing to say, it succeeded. "Impudence." says Mr. St. John, "gets the better of modesty; and this exploit was no sooner performed, than the Wren removed every material to its own box, with the most admirable dexterity. The signs of triumph appeared very visible; it fluttered its wings with uncommon velocity; and an universal joy was preceptible in all its movements. The peaceable Swallow, like the passive Quaker, meekly sat at a small distance, and never offered the least opposition. But no sooner was the plunder carried away, than the injured bird went to work with unabated ardor, and in a few days the depredations were repaired." Mr. St. John, to prevent any repetition of the same violence, removed the Wren's box to another part of the house.

The Creeper hatches twice during the summer, and has generally from eighteen to twenty eggs at a time.

THE RED CREEPER.

This diminutive inhabitant of New Spain, smaller than even the last-mentioned species, I mention merely for the purpose of describing its nest; which, differing, in this respect, from those of most of the other species of Creepers, is pensile.

The nest is formed not unlike a chemist's retort placed with the mouth downward, through which the bird ascends to its offspring in the bulb at the top. Its length is fourteen or sixteen inches; and it is suspended to the most extreme and tender branches of the trees, by means of a kind of woven work, of similar materials to the exterior of the nest. In the broadest part of the bulb, it measures about six inches in diameter. Within it is lined with soft and downy materials, to guard the bodies of the tender young-ones from injury; and it is altogether so very light, as to be driven about by the most gentle breeze.

OF THE HUMMING-BIRDS IN GENERAL.

THE characters of this tribe are, a slender, weak bill, in some species curved, in others straight; the nostrils are minute: the tongue is very long, and formed of two conjoined cylindrical tubes: the legs are weak: the toes placed three forward and one backward: and the tail consisting of ten feathers.

THE HUMMING-BIRD.

The Humming-birds are the most diminutive of all the feathered tribes. They are natives of the warmer parts of America, and of some of the West-India islands; and bear a great resemblance to each other in manners. Their principal food, is the nectar at the bottom of tubular-shaped flowers: this they extract, while on wing, by means of their long and slender bill. Their name is derived from the humming noise they make with their wings. They are gregarious; and construct an elegant hemispherical nest, in which they lay two small white eggs, that are hatched by the sitting of the male and female alternately, The young-ones are often attacked and devoured by Spiders. These birds may be caught by blowing water upon them from a tube; or, like many of our small birds, they may be shot with sand. Small as they are, they are extremely bold and pugnacious. Their colors are too brilliant to be expressed by any pencil.

THE RED-THROATED HUMMIMG-BIRD

The length of this diminutive creature is somewhat more than three inches; of which its bill occupies three quarters of an inch. The male is of a green-gold color on the upper part, with a changeable copper gloss; and the under parts are gray. The throat and forepart of the neck are of a ruby color, in some lights as bright as fire. When viewed sideways, the feathers appear mixed with gold, and beneath they are of a dull garnet color. The two middle feathers of the tail are similar in color to the upper plumage, and the rest are brown.

The female, instead of the bright ruby throat, has only a few obscure brown spots; and all the outer tail-feathers, which in the male are plain, are in the female tipped with white.

This beautiful little creature is as admirable for its vast swiftness in the air, and its manner of feeding, as for the elegance and brilliancy of its colors. It flies so swiftly, that the eye is incapable of following its course; and the motion of its wings is so rapid, as to be imper-

ceptible to the nicest observer. Lightning is scarcely more transient than its flight, nor the glare more bright than its colors.

THE RED-THROATED HUMMING-BIRD.

It never feeds but upon the wing, suspended over the flower from which it extracts nourishment; for its only food is the honeyed juice lodged in flowers, and this it sucks through the tubes of its curious tongue. Like the bee, having exhausted the honey of one flower, it wanders to the next in search of new sweets. It admires most those flowers that have the deepest tubes; and in the countries which these birds inhabit, whoever sets plants of this description before his windows, is sure to be visited by great numbers of them. It is very entertaining to see them swarming around the flowers, and trying every tube by putting in their bills. If they find that their brethren have anticipated them, and robbed the flower of its honey, they will pluck it off in a rage, and throw it on the ground; and sometimes they tear it in pieces.

The most violent passions animate at times these diminutive creatures. They have often dreadful contests, when numbers of them happen to dispute the possession of the same flower. They tilt against one another with such fury, as if they meant to transfix their antagonists with their long bills. During the fight they frequently pursue the conquered birds into the apartments of houses where the windows are left open; they take a turn round the room, as flies do in England; and then suddenly regain the open air. They are fearless of mankind; and, in feeding, will suffer persons to come within two yards of them; but, on a nearer approach, they dart away with wonderful swiftness.

The Red-throated Humming-Bird generally builds on the middle branch of a tree, but sometimes in a low bush, or even on a tobacco-stalk: and the nest is very small. It is quite round: the outside is for the most part composed of the green moss common on old pales and trees; and the inside, of the softest vegetable down the birds can collect. The female lays two eggs, of the size of a pea; which are white, and equal in thickness at both ends.

Fernandez Oviedo, an author of great repute, speaks, from his own knowledge, of the spirited conduct even of these diminutive birds, in defence of their young-ones: "When they observe any one climbing a tree in which they have a nest, they attack him in the face, attempting to strike him in the eyes; and coming, going, and returning, with almost incredible swiftness."

HUMMING-BIRDS AND NEST.

The Humming-Bird is seldom caught alive; a friend of M. du Pratz had, however, this pleasure. He had observed one of these birds enter the bell of a convolvulas; and, as it had quite buried itself to get at the bottom, he ran immediately to the place, closed the flower, cut it from the stalk, and carried off the bird a prisoner. He could not, however, prevail with it to eat; and it died in the course of three or four days.

Carlevoix informs us, that, in Canada, he had possession of one of these birds for about twenty-four hours. It suffered itself to be handled; and even counterfeited death that it might escape. A slight frost in the night destroyed it.

GROUP OF HUMMING-BIRDS.

"My friend Captain Davis informs me," says Dr. Latham, in his Synopsis of Birds, "that he kept these birds alive for four months by the following method:—He made an exact representation of some of the tubular flowers, with paper fastened round a tobacco-pipe, and painted them of a proper color: these were placed in the order of nature, in the cage in which the little creatures were confined: the bottoms of the tubes

were filled with a mixture of brown sugar and water, as often as emptied; and he had the pleasure of seeing them perform every action; for they soon grew familiar, and, though close under the eye, took their nourishment in the same manner as when ranging at large in the open air."

HUMMING-BIRD OF CANADA AND THE UNITED STATES.

The tongue of the Humming-bird is formed much like that of the Woodpecker, being curled round the head, under the skin, and thus capable of being darted to a considerable distance.

There is a fable of a wren and an Eagle. The two birds entered into a contest respecting the height to which they could severally attain. A day was fixed, and the birds started. Away went the Eagle, soaring in lessening spires, until his form was lost in the clouds. But where was the wren? The Eagle had lost sight of his pigmy opponent long ago, but in his pride to show what he could do, he still soared on and on, until the lighter air would scarcely bear his weight. As he hovered with wearied and rapidly beating wings, unable to gain another yard, up sprang the wren from among the Eagle's feathers, where it had sat very comfortably all the while, and fluttered above his head with a song of triumph.

But truth, as has been often said, is stranger than fiction, as appears from the fact that the Eagle can be vanished by a more insignificant foe than even the Wren, by the Humming-Bird, which is not content with a mere racing victory, but drives the Eagle before it. The Ruby-throated Humming-Bird has been seen to dart between the wings of a flying Eagle, to perch upon its head, deliberately to strip off the feathers, and send them floating in a stream after the flight of the persecuted Eagle, which seemed almost driven to madness by its tiny foe.

Like many other little creatures, the assurance and impudence of the Humming-bird is remarkable. It is easily tamed for that very reason, and has been known to domesticate itself in an hour from the time of its capture, and even when released, it has returned again to partake of the dainties which it had tasted during its captivity.

PASSERINE BIRDS.

THE birds of this order have their bills of a conical form, and pointed at the end; and the feet are formed for perching and hopping, the toes being slender and divided, with slender, bent, and sharp claws.

OF THE STARE TRIBE IN GENERAL.

IN the present tribe the bill is straight, and depressed. The nostrils are guarded above by a prominent rim. The tongue is hard and cloven; and the middle toe is connected to the outermost as far as the first joint.

There are, belonging to this tribe, about twenty known species, some of which are found exclusively upon the Old, and others on the New Continent. They chiefly feed on insects and worms.

THE STARLING.

Few Birds are more generally known than the Starling. It is an inhabitant of almost all climates, and is common in every part of England.

In the winter season Starlings collect in vast flocks, and may be known at a great distance by their whirling mode of flight; which M. de Buffon compares to a sort of vortex, in which the collective body performs a uniformly circular revolution, and at the same time continues to make a progressive advance. The evening is the time when Starlings assemble in the greatest numbers, and betake themselves to the fens and marches. In the fens of Lincolnshire they collect in myriads, and do great damage to the inhabitants by roosting on the reeds, (the thatch of that country,) and breaking them down by their weight.

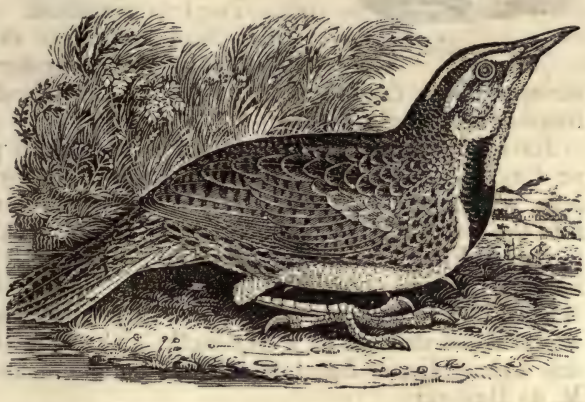
STARLING.

They chatter much in the evening and morning, both when they assemble and disperse. So attached are they to society, that they not only join those of their own species, but also birds of different kinds, and are frequently seen in company with Redwings, Fieldfares, and even with Owls, Jackdaws, and Pigeons. Their principal food consists of Snails, Worms, and insects: they likewise eat various kinds of grain, seeds, and fruit, and are said to be particularly fond of cherries. It is

reported of them that they get into pigeon-houses for the purpose of sucking the eggs.

The female builds an artless nest of straw and small fibres, in the hollows of trees, rocks, or old walls, and sometimes in cliffs that overhang the sea. She lays four or five eggs, of a pale greenish-ash color.

The Starling is a familiar bird, and in a state of captivity is easily trained. Its natural voice is strong and hoarse; but it may be taught, without difficulty, to repeat short sentences, or to whistle tunes with great exactness. In a state of confinement it will eat small pieces of raw flesh, or bread soaked in water.

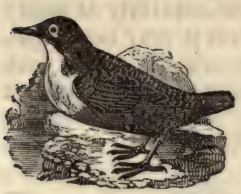


AMERICAN STARLING OR MEADOW LARK.

This well known harmless inhabitant of meadows and *old fields* is not only found in every part of the United States, but appears to be a resident in all the intermediate region, from the frigid latitude of 53°, and the territory of Oregon, to the mild table land of Mexico, and the tropical savannahs of Guiana. In the winter they abound in Alabama and West Florida, so that in some degree, like the Jays, and the legitimate Starlings, they partially migrate in quest of food during the severity of the weather in the colder states. It is not however improbable, but that most of the migrating families of this bird, which we find at this season, have merely travelled eastward from the cold western plains that are annually covered with snow. They are now seen in considerable numbers in and round the salt marshes, roving about in flocks of ten to thirty or more, seeking the shelter of the sea-coast, though not in such dense flocks as the true Starlings; these in the manner of our common Blackbirds assemble in winter, like dark clouds, moving as one body, and when about to descend, perform progressive circular evolutions in the air, like a phalanx in the order of battle; and when settled, blacken the earth with their numbers, as well as stun the ears with their chatter. Like crows also, they seek the shelter of reed marshes to pass the night, and in the day take the benefit of every sunny and sheltered covert.

THE WATER OUZEL.

The Water Ouzel is, in size, somewhat less than the Blackbird. Its bill is black, and almost straight. The eyelids are white. The upper parts of the head and neck are of a deep brown; and the rest of the upper parts, the belly, the vent, and the tail, are black. The chin, the forepart of the neck, and breast, are white or yellowish. The legs are black.



WATER OUZEL.

This bird frequents the banks of springs and brooks; and prefers those of limpid streams whose fall is rapid, and whose bed is broken with stones and fragments of rocks.

Its habits are singular. Aquatic birds, with palmated feet, swim or dive; those which inhabit the shores, wade by means of their tall legs, without wetting their body; but the Water Ouzel walks quite into the flood, following the declivity of the ground. It is observed to enter by degrees, till the water reaches its neck; and it still advances holding its head not higher than usual, though completely immersed. It continues to walk under the water: and even descends to the bottom, where it saunters as on a dry bank. The following is an account of this extraordinary habit, which was communicated by M. Herbert to M. de Buffon:

"I lay concealed on the verge of the lake Nantua, in a hut formed of pine-branches and snow; where I was waiting till a boat, which was rowing on the lake, should drive some wild ducks to the water's edge. Before me was a small inlet, the bottom of which gently shelved, till the water was two or three feet deep in the middle. A Water Ouzel stopped here more than an hour, and I had full leisure to view its manœuvres. It entered the water, disappeared, and again emerged on the other side of the inlet, which it thus repeatedly forded. It traversed the whole of the bottom, and in so doing seemed not to have changed its element, and discovered no hesitation or reluctance in the immersion. However, I perceived several times, that as often as it waded deeper than the knee, it displayed its wings, and allowed them to hang to the ground. I remarked too, that, when I could discern it at the bottom of the water, it appeared enveloped with air, which gave it a brilliant surface; like that on some sorts of beetles, which in water are always enclosed in a bubble of air. Its view in dropping its wings on entering the water, might be to confine this air; it was certainly never without some, and it seemed to quiver. These singular habits were unknown to all the sportsmen with whom I talked on the subject; and perhaps, had it not been for the accident of the snow-hut in which I was concealed, I should also have for ever remained ignorant of them; but the above facts I can aver, as the bird came quite to my feet, and that I might observe it, I refrained from killing it."

The Water Ouzel is found in many parts of Europe. The female makes her nest on the ground, in some mossy bank near the water, of hay and dried fibres, lining it with dry oak-leaves, and forming to it a portico or entrance of moss. The eggs are five in number; white, tinged with a fine blush of red. A pair of these birds, which had for many years built under a small wooden bridge in Caermarthenshire, were found to have a nest early in May: this was taken, but it contained no eggs, although the bird flew out of it at the time. About a fortnight afterwards they had completed another nest in the same place, enclosing five eggs; this was taken; and, in a month, a third nest, under the same bridge, was taken, that had in it four eggs; undoubtedly the work of the same birds, as no others were seen about that part. At the time that the last nest was taken, the female was sitting; and the instant she quitted the nest, she plunged into the water, and disappeared for a considerable while, till at last she emerged at a great distance down the stream. At another time, a nest of the Water Ouzel was found in a steep projecting bank (over a rivulet) clothed with moss. The nest was so well adapted in color to the surrounding materials, that nothing but one of the old birds flying in with a fish in its bill could have led to the discovery. The young-ones were nearly feathered, but incapable of flight; and the moment the nest was disturbed they fluttered out and dropped into the water, and, to the astonishment of the persons present, instantly vanished; but in a little time they re-appeared at some distance down the stream, and it was with difficulty that two out of the five were taken.

The Water Ouzel will sometimes pick up insects at the edge of the water. When disturbed, it usually flirts up its tail, and makes a chirping noise. Its song in spring is said to be very pretty. In some places this bird is supposed to be migratory.

THE RING OUZEL.

This bird is found in various parts of Europe, and is somewhat larger than the common Blackbird. They haunt the wildest and most rocky parts of glens and ravines, and make their nest on some steep bank, under the covert of grass or heath, or on some shelf amidst mosses, which, the outside being made of the same materials, entirely conceal it from view. The upper parts of the body of the male bird is black, the feathers being margined with blackish-grey. On the upper part of the breast is a large crescent-shaped gorget of pure white. The plumage of the female bird is more clouded with grey, and the pectoral gorget is much smaller, and clouded with reddish-brown and grey.

THE WHEATEAR.

The Wheatear is one of our early visitors, appearing at the beginning of March. It is a very conspicuous bird, and can be readily distinguished by the black mark that surrounds the eye, and stretches from the base of the bill, to beyond the ear-coverts. It is a very pretty songster, its notes being soft and sweet, although wanting in power.

It is killed in great numbers for the table, as its flesh is so delicate as to entitle it to the name of the English Ortolan. In the proper season, the bird is covered with fat to such an extent, that the plumage is often spoiled by the fat running from the holes made by the shot.

The nest of the Wheatear is made of the usual materials, and is placed in some sheltered spot where it is well concealed from prying eyes. The eggs are five or six in number, of a delicate feint bluish tinge, and very smooth on the exterior.

THE REDSTART.

The Redstart derives its name from the bright reddish chestnut color of the upper tail coverts and tail feathers, which appear very conspicuous as the bird flits from one tree to another, or dashes off when startled. It inhabits the skirts of forests, copses, gardens, and especially frequents old ivied walls, where numbers of the nests may be found. In 1847, I found a Redstart's nest built in a hole of a wall, forming one side of a narrow passage in Merton College, Oxford. The eggs were nearly hatched, and the birds did not seem to be disturbed by the constant passing of servants with their paraphernalia of brooms, pails, and other implements. The nest was so placed that every passer by could not fail to perceive it, but the birds sat on their eggs quite unconcernedly.

REDSTART.

The song of this bird is not very powerful, but the notes are peculiarly sweet. While singing, it often changes its situation, occasionally singing as it flies.

The nest is placed usually in a hole in a wall, or in a hollow tree. The eggs are five in number, of a greenish-blue color, closely resembling those of the Hedge Accentor. The length of the bird is rather more than five inches. The fourth primary feather is the longest.

THE GARDEN WARBLER

This bird is one of our sweetest songsters, and is supposed by some to be little inferior to the Nightingale itself. So we may well pardon its occasional depredations on our garden fruit for the sake of its melody.

It is a migratory bird, arriving in England in April, and leaving towards the end of August or the beginning of September. Almost every part of England is visited by this bird, and especially those counties where are thick woods and plenty of water.

The color of this Pettichaps is an olive green, shot, as the ladies say, with a greyish shading; while some parts of the body, such as

GARDEN WARBLER.

the sides of the neck, the throat, and under parts, are either ash grey or greyish white. The length of the bird is about six inches.

Its nest is built in hedges, and situated near the ground. In it are laid four or five eggs, of a whitish grey color, spotted with brown, the spots being collected towards the larger end.

This is the Beccafico of the Italians, so celebrated as a dainty for the table.

OF THE THRUSH TRIBE IN GENERAL.

THE Thrushes have the following generic character: a straightish bill, bending towards the point, and slightly notched near the end of the upper mandible: the nostrils oval and for the most part naked: the tongue slightly jagged at the end; the corners of the mouth furnished with a few slender hairs: and the middle toe connected to the outer one as far as the first joint.

Most of the species of Thrush, which are very numerous, feed upon berries and other kind of fruit. They are stated to be particularly fond of the berries of the juniper. Many of them have a melodious song.

THE SONG-THRUSH, OR THROSTLE.

The song of this bird is heard during nearly nine months of the year. The compass of its voice is very considerable, and when brought up from the nest with Woodlarks, or even with Nightingales, it is capable of adopting their notes. Few of the choristers of the woods are heard with greater delight than this. It will sometimes sit for hours together on the top of an elevated tree, and make the woods re-echo with its song.

SONG-THRUSH

The Thrush continues to reside in England through the whole year, but on the Continent it is migratory; usually disappearing during the frost, and re-appearing for a short visit in the months of March and April, before its migration in May.

These birds occasionally breed twice, and sometimes even thrice in the year, if their former hatches happen to have been destroyed Their nests are built in woods or orchards, and not unfrequently in thick hedges near the ground. The outside of the nest consists of fine and soft moss, interwoven with dried grass or hay; and the inside is curiously plastered with Cow-dung. The eggs are usually five or six in number, of a deep blue color marked with black spots. Each

brood, for a little while, follows separately its parents; but this does not long continue, for, as soon as the individuals are capable of obtaining their own subsistence, they disperse.

We are informed by M. de Buffon, that in a few of the districts of Poland such immense numbers of Thrushes are sometimes caught, that the inhabitants load small vessels with them for exportation. The Redwing is a variety of the Thrush.

THE MISSEL, OR MISSELTOE THRUSH, OR STORMCOCK.

The Missel, or Misseltoe Thrush, or Stormcock, according to Waterton, "surpasses all other Thrushes in size, and is decidedly the largest songster of the European birds. He remains with us the whole of the year, and he is one of three birds which charm us with their melody during the dreary winter, when the Throstle and Lark are silent and all the migratory birds have left us, to sojourn in warmer climates. He appears to be gregarious in the months of August and September." "This bird, though usually known by the name of the Misseltoe Thrush in many parts of England, is invariably called the Stormcock by all the lower orders in our neighborhood: not that it delights in storms more than in fine weather; but that nature has taught it to pour forth its melody at a time of the year when the bleak winds of winter roar through the leafless trees.

MISSELTOE-THRUSH.

It is very fond of the berries of the misseltoe, but when they fail it turns its attention to those of the mountain ash, which are almost certain to attract this beautiful and powerful songster. In the summer it devours all kinds of garden-fruits, especially cherries and raspberries.

During the breeding season it is very pugnacious, attacking and driving away not only small birds, but the Crow, the Magpie, or even the prowling Cat. The nest is very large, almost as large as a "wide-awake" hat, is always built in a tree, and contains about five reddish spotted eggs. The length of the bird is eleven inches.

THE BLACK CAP.

BLACK CAP.

This is an English bird hardly inferior to the Nightingale in its musical powers. It is a shy bird, very fond of ivy berries; and sings at twilight and into the later hours of the evening. Its favorite resorts are woods and orchards. It extends its visits in summer to the north of Europe, as far as Lapland.

THE BLUE-THROATED REDSTART.

BLUE THROATED REDSTART.

This bird is found in France, Holland, Italy, and Germany, but rarely in England. It builds in bushes and holes of trees. Its general color is ashy brown; but its breast is of a rich azure blue.

THE MOUNTAIN SHOOTWING.

This is a Javan bird, found only on mountain peaks, living on the lowest branches of the trees, nearest the ground. It feeds on worms and insects. The shortness of its wings incapacitates it for elevated or distant flights.

MOUNTAIN SHOOTWING.

THE FIELDFARE.

Fieldfares, which are well-known winter inhabitants of England; arrive here in great flocks from Russia, Siberia, and other more northern parts of the Continent, about the beginning of October, and feed during that season on the hawthorn, holly, and other berries. They leave in March, for, their breeding places in Sweden and Norway.

FIELDFARE.

There is reason to suppose that the flocks of these birds keep a kind of watch, to remark and announce the appearance of danger. On any person approaching a tree that is covered with them, they continue fearless, till one at the extremity of the bush, rising on its wings, gives a loud and peculiar note of alarm. They then all fly away, except one other, which continues till the person approaches still nearer, to certify as it were, the reality of the danger, and afterwards he also flies off, repeating the note of alarm.

Though Fieldfares build their nests in high trees, and sit on trees in the day-time, yet they always roost on the ground. These birds were held in high esteem by the Roman epicures; who had them in their aviaries, and fattened them with crumbs of bread mixed with minced figs.

THE BLACKBIRD.

The food of the Blackbird consists principally of Worms and shelled Snails; the latter of which, in order to get at the animal, it dashes with great dexterity against the stones. All kinds of insects, as well as fruit, it also eagerly seeks after. In confinement it will eat crumbs of bread; and even flesh, either raw or cooked.

BLACKBIRD.

This is a solitary bird; never congregating, and in general preferring woods and retired situations. Its song is a shrill kind of whistle of various notes; which, although extremely fine, is too loud for any place except woods or open grounds. It commences this early in the spring, and continues it through some part of summer; it desists during the moulting season, but resumes it, for some time, in September and the first winter months.

Blackbirds breed early in the spring. They prepare a nest composed externally of green moss, fibrous roots, and other similar materials: the inside is plastered with earth, and afterwards lined with fine dry grass. The nest is usually placed in a thick bush, against the side of a tree, or on a stump in the side of a bank. The female lays four or five light-blue eggs, thickly covered with pale rust-colored spots, particularly at the large end.

BLACKBIRD.

When the young ones are taken from the nest, they should for

some time be fed on raw meat, bread, and bruised hempseed: the meat should be chopped small, the bread a little wetted, and then the whole mixed together. It is necessary to keep them clean.

THE RED-WINGED BLACK BIRD, OR TROOPIAL.

The Red-winged Blackbird in summer inhabits the whole of North America from Nova Scotia to Mexico. It is migratory north of Maryland, but passes the winter and summer in all the southern States, frequenting chiefly the settlements and rice and cornfields, towards the sea-coast, where they move about like blackening clouds, rising suddenly at times with a noise like thunder, and exhibiting amidst the broad shadows of their funereal plumage, the bright flashing of the vermilion with which their wings are so singularly decorated. After whirling and waving a little distance, like the Starling, they descend as a torrent, and darkening the branches of the trees by their numbers, they commence a general concert that may be heard for more than two miles.

RED-WINGED BLACKBIRD.

When their food begins to fail in the fields, they assemble with the Purple Grakles, very familiarly around the corn-cribs and in the barn-yards, greedily and dexterously gleaning up every thing within their reach. In the month of March, Mr. Bullock found them very numerous and bold near the city of Mexico.

THE COW TROOPIAL, OR COW BLACK-BIRD.

The Cow-pen Bird, perpetually gregarious and flitting, is observed to enter the Middle and Northern States in the latter end of March or the beginning of April. They make their migration now chiefly under cover of the night, or early dawn; and as the season becomes milder they pass on to Canada, and perhaps follow the Warblers and other small birds into the farthest regions of the north, for they are seen no more after the middle of June, until the return of autumn, when, with the colds of October, they again reappear in numerous and augmented flocks, usually associated with their kindred Red-

wings, to whom they bear a sensible likeness, as well as a similarity in notes and manners. They pass the winter in the warmer parts of America as well as in the Southern States, where I have observed them in the ploughed fields, gleaning along with the Red-wings and the common Black-birds. They are also very familiar around the cattle, picking up insects which they happen to disturb, or that exist in their ordure. When on the ground, they scratch up the soil and appear very intent after their food. Sometimes even, infringing on the rights of the Plover, individuals in the winter, frequent the margins of ponds in quest of aquatic insects and small Shell-fish; and they may be seen industriously occupied in turning over the leaves of the water-plants to which they adhere. They also frequent occasionally the rice and corn-fields, as well as their more notorious associates, but are more inclined to native food and insects at all times, so that they are more independent and less injurious to the farmer. As they exist in Mexico, and California, it is probable, that they are also bred in the higher table lands, as well as in the regions of the north. In Louisiana, however, according to Audubon, they are rare visitors at any season, seeming more inclined to follow their route through the maritime districts. Over these countries, high in the air, in the month of October, they are seen by day winging their way to the remoter regions of the south.

COW-BLACKBIRD

THE RICE BIRD, OR BOB-O-LINK.

The whole continent of America, from Labrador to Mexico, and the great Antilles, are the occasional residence of this truly migratory species. About the middle of March, or beginning of April, the cheerful Bob-o-link makes his appearance in the southern extremity of the United States, becoming gradually arrayed in his nuptial livery, and accompanied by troops of his companions, who often precede the arrival of their more tardy mates. According to Richardson it is the beginning of June when they arrive at their farthest boreal station in the fifty-forth degree. We observed them in the great western plains to the base of the Rocky Mountains, but not in Oregon. Their

wintering resort appears to be rather the West Indies than the tropical continent, as their migrations are observed to take place generally to the east of Louisiana, where their visits are rare and irregular. At this season also they make their approaches chiefly by night, obeying, as it were, more distinctly, the mandates of an overruling instinct, which prompts them to seek out their natal regions; while in autumn, their progress, by day only, is alone instigated by the natural quest of food. About the 1st of May the meadows of Massachusetts begin to re-echo their lively ditty. At this season, in wet places, and by newly ploughed fields, they destroy many insects and their larvæ. According to their success in obtaining food, parties often delay their final northern movement as late as the middle of May, so that they appear to be in no haste to arrive at their destination at any exact period. The principal business of their lives, however, the rearing of their young, does not take place until they have left the parallel of the fortieth degree. In the savannahs of Ohio and Michigan, and the cool grassy meadows of New York, Canada, and New England, they fix their abode, and obtain a sufficiency of food throughout the summer, without molesting the harvest of the farmer, until the ripening of the latest crops of oats and barley, when

BOB-O-LINK.

BOB-O-LINK PLUCKING WHEAT.

in their autumnal and changed dress, hardly now known as the same species, they sometimes show their taste for plunder, and flock together like the greedy and predatory Blackbirds.

THE COMMON CROW-BLACKBIRD.

This very common bird is an occasional or constant resident in every part of America, from Hudson's Bay and the northern interior to the great Antilles, within the tropic. In most parts of this wide region they also breed, at least from Nova Scotia to Louisiana, and probably farther south. Into the States north of Virginia they begin to migrate from the beginning of March to May, leaving those countries again in numerous troops about the middle of November. Thus assembled from the north and west in increasing numbers, they wholly overrun, at times, the warmer maritime regions, where they assemble to pass the winter in the company of their well known cousins the Red-winged Troopials or Blackbirds; for both, impelled by the same predatory appetite, and love of comfortable winter quarters, are often thus accidentally associated in the plundering and gleaning of the plantations. The amazing numbers in which the present species associate are almost incredible. Wilson relates that on the 20th of January, a few miles from the banks of the Roanoke in Virginia, he met with one of those prodigious armies of Blackbirds, which, as he approached, rose from the surrounding fields with a noise like thunder, and descending on the stretch of road before him, covered it and the fences completely with black; rising again, after a few evolutions, they descended on the skirt of a leafless wood, so thick as to give the whole forest, for a considerable extent the appearance of being shrouded in mourning, the numbers amounting probably to many hundreds of thousands. Their notes and screams resembled the distant sound of a mighty cataract, but strangely attuned into a

CROW BLACKBIRD.

musical cadence, which rose and fell with the fluctuation of the breeze, like the magic harp of Æolus.

Their depredations on the maize crop or Indian corn commence almost with the planting. The infant blades no sooner appear than they are hailed by the greedy Blackbird as the signal for a feast; and, without hesitation, they descend on the fields, and regale themselves with the sweet and sprouted seed, rejecting and scattering the blades around as an evidence of their mischief and audacity. Again, about the beginning of August, while the grain is in the milky state, their attacks are renewed with the most destructive effect, as they now assemble as it were in clouds, and pillage the fields to such a degree that in some low and sheltered situations, in the vicinity of rivers, where they delight to roam, one fourth of the crop is devoured by these vexatious visitors. The gun, also, notwithstanding the havoc it produces, has little more effect than to chase them from one part of the field to the other. In the Southern States, in winter, they hover round the corn-cribs in swarms, and boldly peck the hard grain from the cob through the air openings of the magazine. In consequence of these reiterated depredations they are detested by the farmer as a pest to his industry; though, on their arrival their food for a long time consists wholly of those insects which are calculated to do the most essential injury to the crops.

THE MOCKING BIRD, OR MIMIC THRUSH.

This bird is about the size of a Blackbird, but, in its general form, is somewhat more slender. Its plumage is gray, paler on the under parts of the body than above.

MOCKING BIRD.

This capricious little mimic is common throughout nearly the whole of North America, as well as in several of the West Indian Islands. It cannot, indeed, vie with the feathered inhabitants of those countries in brilliancy of plumage; but it is contented with much more rare and estimable qualifications. It possesses not only natural notes of its own, which are truly musical and solemn; but it can at pleasure assume the tone of every other animal in the forest, from the Humming-bird to the Eagle, and descending even to the Wolf or the Raven. One of them, confined in a cage, has been heard to mimic the mewing of a Cat, the chattering of a Magpie, and the creaking of the hinges of a sign-post in high winds.

The Mocking Bird seems to have a pleasure in leading other birds astray. He is said at one time to allure the smaller birds with the call of their mates; and when they come near, to terrify them with the scream of an Eagle. There is scarcely a bird of the forest that is not at times deceived by his call.

But he is not like the mimics among mankind, who seldom possess

any independent merit. A Garrick and a Foote have not pleased more in their own characters, than the Mocking Bird does in his. He is the only one of the American singing-birds that can be compared with those of Europe; and, were it not for the attention that he pays to every sort of disagreeable noise, which tends to debase his best notes, there can be little doubt that he would be fully equal to the song of the Nightingale in its whole compass. He frequents the dwellings of the American farmers; where, sitting on the roof or chimney, he sometimes pours forth the most sweet and varied notes imaginable. The Mexicans, on account of his various notes and his imitative powers, call him, "The Bird of Four Hundred Tongues." In the warmer parts of America he sings incessantly from March to August, both day and night: beginning with his own compositions, and frequently finishing by borrowing from those of the whole feathered choir. He repeats his tunes with such artful sweetness as to excite both pleasure and surprise.

MOCKING BIRD.

It is not, however, in the powers of voice alone that these birds are pleasing; they may even be said to dance. When excited into a kind of ecstacy by their own music, they gradually raise themselves from the place where they stand, and, with their wings extended, drop with their head down to the same spot, and whirl round, accompanying their melody with a variety of interesting gesticulations.

They frequently build their nests in bushes or fruit-trees, in the vicinity of houses; but they are so shy, that if a person only look at the nest, they immediately forsake it. The young-ones may be brought up in a cage, and rendered domestic; but this cannot be done without great difficulty, not one attempt in ten being successful for that purpose. If the young-ones are caught in the nest, the mother will feed them for a few days, but is sure to desert them afterwards. If a cat happen to approach the nest, the parent bird will fly at the head of the animal, and, with a hissing noise, scare it away.

The Mocking Bird feeds its young-ones with Grasshoppers; and, when it wants any of these insects, it flies into the pastures, flaps its wings near the ground, and makes a booty of three or four at a time, with which it returns to the nest. It also feeds on different kinds of berries; and is itself eaten, and is very delicate food.

THE LOCUST-EATING THRUSH.

The head, breast, and back of the Locust-eating Thrush are of a pale ash-color, and the abdomen and rump are white. The wings and tail are black: the latter short, and a little forked. From the angle of the mouth a naked space of sulphureous yellow extends under the eye, and a little beyond it; and there are two naked black streaks under the throat.

LOCUST-EATING THRUSH.

To this new species, which is found in the interior of the southern districts of Africa, and is only met with in places where the migrating Locusts frequent, Mr. Barrow has affixed the specific name of *Gryllivorus*. This he has done with great propriety, as, when such is to be obtained, its whole food seems to consist of the larvæ of these insects, and, except when the Locust infests any particular district, this bird is seldom to be found there.

Providence, which has not often given a bane without accompanying it with an antidote, seems to have peculiarly ordained this bird as a relief to the inhabitants of Africa, from the dreadful attacks of these most voracious and most numerous of all insects. But, however astonishing the multitudes of Locusts may be, the numbers of the Locust-eating Thrushes are not less so. Their nests, which at a distance seem of enormous size, appear on examination to consist of a number of cells, each of which forms a separate nest, with a tube that leads into it through the side; so that what seemed but one great nest, is found to consist of a little republic, of perhaps ten or twenty. One roof of interwoven twigs covers the whole, like that made over the nest of the Magpie of England.

Mr. Barrow saw a vast number of these birds in the district of Sneuberg, about one hundred and fifty leagues north-east of the Cape. They had not visited that colony for thirteen years before; that is to say, since the last time the Locusts had infested it. They had, however, now taken up a temporary abode, in a place which they were not likely, in a short space of time, to be under the necessity of quitting for want of food. Of the innumerable multitudes of the incomplete insects or larvæ of the Locusts, that at this time infected the southern districts of Africa, no adequate idea could possibly be formed; for, in an area of nearly two thousand square miles, the whole surface of the earth might literally be said to be covered with them.

OF THE GROSBEAKS IN GENERAL.

In the Grosbeaks we observe a strong, thick, and convex beak; rounded from the base to the point of each mandible, and admirably adapted for breaking in pieces the shells of the seeds on which they feed. The nostrils are small and round; and the tongue is formed as if the end were cut off. The toes, except in one species, are placed three forwards.

THE CROSS-BILL.

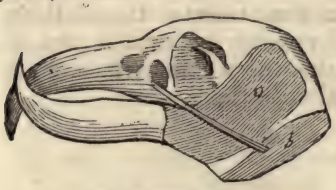
The male Cross-bills are red, varied with brown or green; and at certain seasons of the year they change to deep red, to orange, or pale yellow. The females are of an olive green color, which they also change occasionally.

CROSS-BILL.

Doctor Townson, whilst he resided at Gottingen, possessed several Cross-bills. These, by kind treatment, soon becoming tame, he suffered to be at liberty in his study. He had thus constant opportunities of observing them, and as often of admiring their docility and sagacity; but the singular structure of their bills chiefly engaged his attention.

This structure M. de Buffon, perhaps unthinkingly, and certainly unjustly, has considered as one of Nature's freaks, calculated to render the bird much less essential service than a beak in some other form would have done. But, notwithstanding the apparently awkward and useless shape of this member, it has been found to have the best possible adaptation to the destination and habits of the bird.

The two mandibles do not lie straight; but pass, for a considerable part of their length, on the side of each other, like the blades of a pair of scissors. By means of this peculiar construction, the Cross-bills are able to procure their food with the utmost address. They live principally on the seeds that are contained in the cones of the fir or pine; and it is to extract these that this structure is principally adapted. In this operation, they fix themselves across the cone, then bring the points of the beak from their crossed or lateral position to be immediately opposite to each other. In this reduced compass, they insinuate it between the scales, and, distending the two mandibles to their usual position sideways, force the scales open; and then, again bringing the points into contact, pick out the seed, in the same manner as if their bills were formed like those of other birds. While in this



BILL OF CROSS-BILLS.

act, they are so intent on the business, as frequently to suffer themselves to be caught by means of a horse-hair noose fixed to a long fishing-rod. They are discovered by the twittering noise they make while feeding.

The degree of lateral force which they are able to exert, is very surprising. This, which they are at times fond of exercising for mere amusement, renders them, in a tame state, not a little mischievous. The Cross-bills which Dr. Townson had at Gottingen would often come to his table while he was writing, and carry off his pencils, little chip boxes in which he occasionally kept insects, and other similar objects, and tear them to pieces almost instantaneously. Their mode of operation was first to peck a little hole; to insert into this their bill, and then to split or tear the object by the lateral force. When he gave them, as he often did, almonds in their shell, they got at the kernel in the same manner; first pecking a hole, and then enlarging this by wrenching off the pieces by the lateral force.

Notwithstanding the apparent awkwardness of this beak, the Cross-bills are able, by bringing the mandibles point to point, even to pick up and eat the smallest seeds. The German bird-catchers usually feed them with poppy and other small seeds; and they shell hempseeds in eating them, as well as any other birds whatever. These birds breed in Austria; building their hemispherical nests in the branches of high trees. In these they lay a few whitish eggs, spotted towards the thicker end with red. They are somewhat rare in England.

THE GREENFINCH.

The upper parts of the body are of a yellowish green, and some of the lower parts are white. The outer quill-feathers are edged with yellow. The tail is forked, and the four lateral feathers are yellow at the base. The bill is brownish, and the legs flesh-colored.

GREENFINCH.

Greenfinches are very common birds in England. They build their nests in hedges, and lay five or six eggs, of a pale green color, marked with blood-colored spots. During the breeding-time, the bird that is not immediately engaged in incubation or nutrition, may often be seen sporting on the wing, in a pleasing manner, over the bush.

They are so easily tamed, as sometimes to eat out of the hand in five or ten minutes after they are taken, if there be an opportunity of immediately carrying them into the dark. The bird should then be put upon the finger, from which, not knowing how to fly in the dark, it will not attempt to move: the finger of the other hand should afterwards be put under its breast, on which it will climb. This must be repeated eight or ten times; and by stroking and caressing the bird at the intervals, it will find that no injury is intended. The light being then let in by degrees, it will very frequently eat bruised seed out of the hand, and afterwards continue tame.

THE CARDINAL GROSBEAK.

The Cardinal Grosbeak is about eight inches in length. The bill is stout, and of a pale red color. On the head there is a pointed crest: the plumage is in general of a fine red, but round the bill and throat it is black. The legs are of the same color as the bill.

CARDINAL GROSBEAK.

This is an inhabitant of several parts of North America. The melody of its song is said somewhat to resemble that of the Nightingale. In spring, and during great part of the summer, it sits on the tops of the highest trees, and with its loud and piercing notes makes the forests echo.

The Cardinal Grosbeaks are chiefly remarkable for laying up, during summer, their winter provision of maize and buckwheat. Nearly a bushel of maize has been found in the retreat of one of these birds, artfully covered with leaves and small branches of trees, and only a small hole left for the bird to enter at.

The Americans frequently keep these birds in cages; where they sing, with a very short interval of silence, through the whole year.

THE GRENADIER GROSBEAK.

The Grenadier Grosbeak is of about the size of a sparrow. The body is in general of a beautiful red color. The forehead, sides of the head, chin, breast, and belly, are black. The wings are brown, and the legs pale brown.

The Cape of Good Hope, and some other parts of Africa, are frequented by this bird; which is supposed to be the Finch described by Kolben in his account of that colony. He says that it is chiefly found in marshy and reedy grounds, where it makes its nest and produces its offspring. The nest is formed among the reeds, with small twigs interwoven so closely with cotton as not to be penetrated by any weather. It is also divided into two compartments; of which the upper is for the male, and the lower for the female and the young ones. In winter, the color of these birds is changed from scarlet to ash-color.

The appearance of the Grenadier Grosbeaks, among the green reeds of their native climates, is said to be very beautiful; for, from the extreme brightness of their colors, they appear like so many scarlet lilies.

THE ABYSSINIAN GROSBEAKS.

This is somewhat larger than the last species; having the bill strong and black; the head, throat, and breast, black; the upper parts of the body, the belly, and thighs, of a pale yellowish brown; the quills and tail brown, edged with yellow; and the legs reddish gray.

ABYSSINIAN GROSBEAK.

The Abyssinian Grosbeak forms a curious nest, of pyramidal shape; which is suspended from the ends of branches, like the nests of some other birds of this tribe. The opening is on one side facing the east; the cavity is separated in the middle by a partition to half its height; up this the bird ascends perpendicularly, and then, descending on the other side, forms its nest in the further chamber. By this means the brood is defended from Snakes, Squirrels, Monkeys, and other mischievous animals; besides being secured from the rains, which in that country last sometimes for five or six months successively.

THE PHILIPPINE GROSBEAKS.

The length of this species is about five inches and a half. The bill and some adjacent parts are brown. The top of the head, and the hind part of the neck and back, are yellow. The lower part of the back is brown. The fore parts of the neck and breast are yellow, and from thence under the belly the color is yellowish white. The legs are also yellowish.

It is found in the Philippine Islands, and in some parts of Abyssinia.

The Philippine Grosbeaks construct their nests in the form of a long cylinder, which swells out into a globular or somewhat oval shape. This is composed of various kinds of fine vegetable fibres, and fastened, by its upper extremity, to the outer branch of a tree. The entrance is from beneath, whence a passage is made to the globular cavity, in which an inner nest and the eggs are placed in perfect security.

THE BENGAL GROSBEAK.

This bird is somewhat larger than a Sparrow. Its general plumage is yellow brown. The head and legs are yellowish. The beak is conical, and very thick in proportion to the body.

This bird, says Sir William Jones in his Asiatic Researches, is exceedingly common in Hindostan. He is astonishingly sensible, faithful, and docile; never voluntarily deserting the place where his young-ones are hatched, but not averse, like most other birds, to the society of mankind, and easily taught to perch on the hand of his master. In a state of nature he generally builds his nest on the highest trees that he can find, especially on the palmyra, or the Indian fig-tree, and he prefers that which happens to overhang a well or a rivulet; he makes his nest of grass, which he weaves like cloth, and shapes like a large bottle, suspending it firmly on the branches, but so as to rock with the wind, and placing it with its entrance downward, to secure it from birds of prey. The nest usually consists of two or three chambers; and it is popularly believed that he lights them with Fire-flies, which he is said to catch alive at night, and confine with moist clay or with cow-dung. That such flies are often found in his nest, where pieces of cow-dung are also stuck, is indubitable; but as their light could be of little use to him, it seems probable that he only feeds on them.

BENGAL GROSBEAK.

He may be taught with ease to fetch a piece of paper, or any small thing that his master points out to him. It is an attested fact, that if a ring be dropped into a deep well, and a signal given to one of these birds, he will fly down with amazing celerity, catch the ring before it touches the water, and bring it up to his master with apparent exultation; and it is confidently asserted, that if a house or any other place be once or twice shown to him, he will carry a note thither immediately, on a proper signal being made. One instance of his docility Sir William Jones was himself an eye-witness of. The young Hindoo women at Benares, and in other places, wear thin plates of gold, called *ticas*, slightly fixed, by way of ornament, between their eye-brows: and, when they pass through the streets, it is not uncommon for the youthful libertines, who amuse themselves with training these birds, to give them a signal, which they understand, and send them to pluck the pieces of gold from the foreheads of their mistresses, which they bring in triumph to their lovers.

THE SOCIABLE GROSBEAK.

The length of the Sociable Grosbeak is about five inches and a half. Its color is rufus-brown above, and yellowish beneath. The bill and forehead are black, the region of the ears is yellowish, and the legs are brown. The tail is short.

SOCIABLE GROSBEAK.

This species is an inhabitant of the interior country of the Cape of Good Hope.

Few birds live together in such large societies, or have a mode of nidification so uncommon, as these. They construct their nests in a species of mimosa; which grows to an uncommon size, and seems well suited to them, on account of its ample head, and strong wide-spreading branches. The tallness and smoothness of its trunk is also a perfect defence against the serpent and monkey tribes. The mode in which the nests are fabricated is highly curious. In one tree, described by Mr. Patterson, there could not be fewer than from eight hundred to a thousand under one general roof. Mr. P. calls it a roof, because he says it resembles that of a thatched house; and projects over the entrance of the nest below, in a very singular manner. The industry of these birds "seems almost equal (observes this traveller) to that of the bee. Throughout the day they appear to be busily employed in carrying a fine species of grass; which is the principal material they employ for the purpose of erecting this extraordinary work, as well as for additions and repairs. Though my short stay in the country was not sufficient to satisfy me, by ocular proof, that they added to

their nest as they annually increased in numbers; still, from the many trees which I have seen borne down by the weight, and others which I have observed with the boughs completely covered over, it would appear that this is really the case. When the tree, which is the support of this aërial city, is obliged to give way to the increase of weight, it is obvious that the birds are no longer protected, and are under the necessity of rebuilding in other trees. One of these deserted nests I had the curiosity to break down, for the purpose of informing myself of the internal structure of it; and found it equally ingenious with that of the external. There were many entrances; each of which formed a regular street, with nests on both sides about two inches distant from each other. The grass with which the birds build is called the Bushman's grass; and I believe the seed of it to be their principal food; though on examining their nests, I found the wings and legs of different insects. From every appearance, the nest which I dissected had been inhabited for many years; and some parts of it were much more complete than others. This, therefore, I conceive to amount nearly to a proof, that the animals added to it at different times, as they found necessary, from the increase of their family, or rather of the nation or community."

THE BULFINCH.

In a state of nature the Bulfinch has but three cries, all of which are unpleasant: but if instructed methodically, and accustomed to finer, mellower, and more lengthened strains, it will listen with attention; and the docile bird, whether male or female, without relinquishing its native airs, will imitate exactly, and sometimes even surpass, its master. "I know a curious person, (says the author of the *Ædonolgie*,) who having whistled some airs quite plain to a Bulfinch, was agreeably surprised to hear the bird add such graceful turns, that the master could

THE BULFINCH.

scarcely recognise his own music, and acknowledged that the scholar excelled him." It must, however, be confessed that, if the Bulfinch be ill-directed, it acquires harsh strains. A friend of M. de Buffon saw one that had never heard any persons whistle but carters; and it whistled like them, with the same strength and coarseness. The Bulfinch also easily learns to articulate words and sentences; and utters them with so tender an accent, that we might almost suppose it felt their force.

These birds are susceptible of personal attachment, which is often strong and durable. Some have been known, after escaping from confinement and living a whole year in the woods, to recognise the voice of their mistress, and return to her. Others have died of melancholy, on being removed from the first object of their attachment. They will also remember injuries received: a Bulfinch that had been thrown to the ground in its cage by some of the rabble, though it did not appear much affected at the time, fell into convulsions ever afterwards at the sight of any mean-looking person, and expired in one of these fits, eight months after the accident.

Bulfinches are not uncommon in England: they construct their nests in bushes, about the middle of May. These are usually built in orchards, woods, or parks, where the trees are numerous. The nest of the Bulfinch is a fabric apparently constructed with little art; but it so nearly resembles the color of the surrounding foliage, as not easily to be discovered. The female lays four or five eggs, of a bluish color, marked at the larger end with dark brown and faintly reddish spots.

In the summer-time these birds chiefly frequent woods and retired places; but in winter they approach gardens and orchards. Here as soon as the vegetation commences, they make great havoc among the buds of the trees.

THE ARABIAN BULFINCH.

This species was found by Mr. Hemprich near Mount Sinai in Arabia; and appears also to extend into Egypt. It was one of the discoveries of the travellers sent some time since into that country by the king of Prussia to obtain specimens of natural history. The male has red and white feathers about the head, and the body is ash colored varied with rose red; the wings are brown.

THE BLUE BULFINCH.

This is one of the American varieties. It is found in Brazil. It is ash-colored, varied with blue and white, with a red bill.

THE BUNTING TRIBE.

THESE birds have a conical bill, and the sides of each mandible bending inward. On the roof of the upper mandible is a hard knob, used for the breaking of hard seeds.

THE COMMON BUNTING.

A hard round knob in the roof of the upper mandible, points ou the genus Emberiza. This knob is probably used for the purpose of breaking the shells of the small but hard seeds on which the bird feeds.

Large flocks of these birds collect together in the autumn and winter in their attacks upon the farm-yard or the field. Partly in revenge for their depredations, and partly on account of the price that they will fetch in the market, great numbers are annually caught in nets or shot.

The nest is always placed either on or near the ground, and contains four or five darkish eggs, covered very irregularly with deep brown marks.

THE YELLOW HAMMER, OR YELLOW BUNTING,

Is a very delicately marked little bird, very common in our hedges, where it flits before the traveller, always keeping about twenty yards in front. It makes its nest on the ground, and lays five eggs curiously scribbled over with dark chocolate lines, just as if a child had been trying to write Arabic on the eggs.

THE BLACKHEADED BUNTING,

Is a very beautiful bird, frequenting marshes, and singing only at night. This bird has an enviable reputation as a songster, which, it derives from the fact, that the Sedge-warbler, whose merits are superior, frequents the same haunts, and conceals himself from view while warbling his liquid notes, while the former renders himself prominent.

THE WHIDAH BIRD.

In its *summer plumage* the neck of the Whidah Bird has, at the back, a broad semi-collar, of orange yellow color. The breast is reddish, the under parts of the body and the thighs are white; and the neck, the back, the wings, and tail, are black. In the tail there are four feathers much longer than the others: of these, two are about thirteen inches in length, and are bent somewhat like those of a cock;

the other two are shorter, considerably broader, and each terminate in a slender thread.

The *winter plumage* is entirely different from the above. The four long tail-feathers fall off: the head is varied with black and white: the breast is black; and the upper wing-coverts are dirty yellow. The feathers of the tail and wings are dark brown; and those of the under part of the body are white.

In the kingdom of Angola, on the western coast of Africa, and in the country around Mosambique, on the eastern coast of that quarter of the world, these birds are found in great numbers. They are somewhat larger than a Sparrow, and subsist on seeds of various kinds.

It is a remarkable fact, that the Whidah Birds have in winter a plumage entirely different from that by which they are distinguished during the summer; and that even their most characteristic feathers are every year shed, without being renewed for several months. When the birds are brought into northern climates, this change generally takes place about the beginning of November. Their winter plumage continues till the spring; and the tail-feathers are not again completed till the end of June or the beginning of July. The color of the beak and legs, the former blackish and the latter flesh-colored, is permanent.

In the month of May, 1820, Mr. Carlisle favored me with the following account of a bird of this species, which I have often seen in his possession: "The habits and manners of my Whidah Bird have proved both entertaining and instructive. It has been my constant companion for more than five years, and our mutual good understanding has increased every day. As an intelligent creature, it readily distinguishes me from other persons, and never fails to show its preferable attachment, by a little note and by fluttering towards the nearest side of the cage, on my entering and leaving the room. When clad in its black and orange plumage, and ornamented with its long and crested tail-feathers, it sings much like the warble of the House-Swallow, and, during its song, it shakes its head rapidly sideways, looking steadily at me as if to attract my regard. It then, as if in a state of ecstacy, jumps quickly from perch to perch, rattling its tail with a noise somewhat resembling that which is made by the Rattlesnake. When it wants fresh water, sand, or food, it taps quickly with its beak against the cage, until it attracts my notice. Its only food is canary-seed. I have observed that, on first uncovering its cage it begins to stretch out its legs and wings, then it hops down to sip water, afterwards it eats for about half an hour, picks some sand, and then carefully prunes its feathers. In its ordinary plumage this bird nearly resembles the Reed-Sparrow; and so complete is its change, that not one of the former feathers, remain after either of the two moultings. These moultings take place half yearly, and the shedding of its principal tail-feathers, has been, for five autumns, within three days of the same date in each year.

"As the claws of confined birds grow inconveniently long, I have generally found it expedient to clip those of my bird twice a year, and this process was at first attended with anger; but lately the

occasion is remembered, the bird quitely suffers itself to be caught, and lies patiently in my hand until the operation is over. During this operation it sometimes eats sugar out of my mouth; and when so indulged, it forgets its position so far as to sing a few notes."

A pair of Whidah Birds kept in France for many years, were very lively and active. They were fed chiefly on millet and canary-seed, and occasionally on chickweed and chicory. The male had a shrill kind of song, which he generally commenced about the time that his long tail-feathers began to grow. These birds did not breed, nor indeed did they make any preparations for the formation of a nest.

OF THE FINCH TRIBE IN GENERAL.

THE Finches are easily distinguished from other birds, by their having a bill very conical and sharp-pointed, and somewhat slender towards the end. They are a numerous and active race, dispersed widely over the world, and feeding principally on insects and grain.

THE LINNET.

The length of the Linnet is about five and a half inches. The bill is bluish grey. The eyes are hazel: the upper parts of the head, neck, and back, are of a dark reddish brown, the edges of the feathers pale: the under parts are of a dirty reddish white; the breast is of a deeper color than the rest, and in spring changes to a beautiful crimson; the sides are spotted with brown; the quills are dusky, edged with white; the tail is brown, and with white edges, except the two middle feathers, which have reddish margins; the legs are brown; the female wants the red color on the breast, instead of which she is there marked with streaks of brown; she has less white on her, and her colors, in general, are less bright than those of the male.

LINNET.

For the sweetness of its song the Linnet is much admired: its notes are considered little inferior to those of the most musical of our birds. The Linnet may also easily be taught to imitate the song of any other bird, if brought up with it from the nest.

Linnets have young-ones about the month of May. They usually form their nest in a thick bush or hedge. This is small: the outside is composed of bents, dried weeds, and straw; and the inside of horse-hairs, and wool or cotton, mixed with downy materials collected from

dried plants. The female lays four or five white eggs, speckled particularly towards the large end, with red.

The season in which the bird-catchers usually take these birds, is during the months of June, July or August, or about Michaelmas. They employ for this purpose limed twigs or clap-nets. If, when caught, they be put into store-cages, and fed on any favorite seed for two or three days, they will soon become tame. After this they may be put into separate cages, and fed with rape or canary-seed. If it be intended that the Linnet should imitate the notes of any other bird, it ought to be taken from the nest when about ten days old.

THE COMMON SPARROW.

No bird is better known in every part of Great Britain than the Sparrow. It is a very familiar bird, but so crafty as not to be easily taken in snares. In a wild state its note is only a chirp: this arises, however, not from want of powers, but from its attending solely to the note of the parent birds. A Sparrow, when fledged, was taken from the nest, and educated under a Linnet; it also heard, by accident, a Goldfinch; and its song was, in consequence, a mixture of the two.

THE COMMON SPARROW.

Few birds are more execrated by the farmers, and perhaps more unjustly so, than Sparrows. It is true, they do some injury in devouring corn; but they are probably more useful than noxious. Mr. Bradley, in his General Treatise on Husbandry and Gardening, shows, that a pair of Sparrows, during the time they have their young-ones to feed, destroy on an average, every week, about three thousand three hundred and sixty Caterpillars. This calculation he founded upon actual observation. He discovered that the two parents carried to the nest forty Caterpillars in an hour. He supposed the Sparrows to enter the nest only during twelve hours each day, which would cause a daily consumption of four hundred and eighty Caterpillars; and this average gives three thousand three hundred and sixty Caterpillars extirpated weekly from a garden. But the utility of these birds is not limited to this circumstance alone; for they likewise feed their young-ones with Butterflies and other winged insects, each of which, if not destroyed, would be the parent of hundreds of Caterpillars.

Sparrows build early in the spring; and generally form their nests under the eaves of houses, or in holes in the walls. But when such convenient situations are not to be had, they build in trees a nest bigger than a man's head, with an opening at the side. It is formed

of straw and hay, and lined with feathers, and so nicely managed as to be a defence against both wind and rain. Sparrows sometimes form their nest in the bottoms of Rooks' nests; and this seems a favorite situation with them.

Mr. Smellie relates a pleasing anecdote of the affection of these birds towards their offspring:—"When I was a boy, (says this gentleman,) I carried off a nest of young Sparrows, about a mile from my place of residence. After the nest was completely moved, and while I was marching home with them in triumph, I perceived, with some degree of astonishment, both the parents following me at some distance, and observing my motions in perfect silence. A thought then struck me, that they might follow me home, and feed the young according to their usual manner. When just entering the door I held up the nest, and made the young-ones utter the cry which is expressive of the desire of food. I immediately put the nest and the young in the corner of a wire cage, and placed it on the outside of a window. I chose a situation in the room where I could perceive all that should happen, without being myself seen. The young birds soon cried for food. In a short time both parents, having their bills filled with small Caterpillars, came to the cage; and after chatting a little, as we would do with a friend through the lattice of a prison, gave a small worm to each. This parental intercourse continued regularly for some time; till the young-ones were completely fledged, and had acquired a considerable degree of strength. I then took one of the strongest of them, and placed him on the outside of the cage, in order to observe the conduct of the parents after one of their offspring was emancipated. In a few minutes both parents arrived, loaded, as usual, with food. They no sooner perceived that one of their children had escaped from prison, than they fluttered about, and made a thousand noisy demonstrations of joy, both with their wings and their voices. These tumultuous expressions of unexpected happiness at last gave place to a more calm and soothing conversation. By their voices and their movements it was evident that they earnestly entreated him to follow them, and to fly from his present dangerous state. He seemed to be impatient to obey their mandates; but by his gestures, and the feeble sounds he uttered, he plainly expressed that he was afraid to try an exertion he had never before attempted. They, however, incessantly repeated their solicitations: by flying alternately from the cage to a neighboring chimney-top, they endeavored to show him how easily the journey was to be accomplished. He at last committed himself to the air, and alighted in safety. On his arrival, another scene of clamorous and active joy was exhibited. Next day I repeated the same experiment, by exposing another of the young-ones on the top of the cage. I observed the same conduct with the remainder of the brood, which consisted of four. I need hardly add, that not one either of the parents or children ever afterwards re-visited the execrated cage."

THE SONG-SPARROW.

THIS familiar and almost domestic bird is one of the most common and numerous Sparrows in the United States; it is, also, with the Blue-bird, which it seems to accompany, one of the two earliest, sweetest, and most enduring warblers. Though many pass on to the Southern, States at the commencement of winter, yet a few seem to brave the colds of New England, as long as the snowy waste does not conceal their last resource of nutriment. When the inundating storm at length arrives, they no longer, in the sheltering swamps, and borders of bushy streams, spend their time in gleaning an insufficient subsistence, but in the month of November, begin to retire to the warmer States; and here, on fine days, even in January, whisper forth their usual strains. As early as the 4th of March, the weather being mild, the Song-Sparrow and the Blue-Bird here jointly arrive, and cheer the yet dreary face of nature with their familiar songs. The latter flits restlessly through the orchard or neighboring fields; the Sparrow, more social, frequents the garden, barn-yard, or road-side in quest of support, and from the top of some humble bush, stake, or taller bough, tunes forth his cheering lay, in frequent repetitions, for half an hour or more at a time. These notes have some resemblance to parts of the Canary's song, and are almost uninterruptedly and daily delivered, from his coming to the commencement of winter.

THE SONG-SPARROW.

THE GOLDFINCH.

Goldfinches are very beautiful and well-known birds, much esteemed for their docility, and the sweetness of their song. They are fond of orchards, and frequently build their elegant mossy nest in an apple or pear-tree. They commence this operation about the month of April, when the fruit-trees are in blossom. As they excel nearly all our small birds in beauty of plumage, so also they do in the art which they employ in the formation of this structure. The nest is small; its

outside consists of fine moss, curiously interwoven with other materials; and the inside is lined with grass, horse-hair, wool, feathers, and down. The eggs are five in number, of a white color, speckled and marked with reddish brown.

These birds may be caught in great numbers, at almost any season of the year, either with limed twigs, or the clap-net; but the best time is said to be about Michaelmas. They are easily tamed; and are remarkable for their extreme docility, and the attention they pay to instructions. It requires very little trouble to teach them to perform several movements with accuracy; to fire a cracker, and to draw up small cups containing their food and drink.

Some years ago, the Sieur Roman exhibited in this country the wonderful performances of his birds. These were Goldfinches, Linnets, and Canary-birds. One appeared dead, and was held up by the tail or claw without exhibiting any signs of life. A second stood on its head, with its claws in the air. A third imitated a Dutch milkmaid going to market, with pails on its shoulders. A fourth mimicked a Venetian girl looking out at a window. A fifth appeared as a soldier, and mounted guard as a sentinel. The sixth was a cannoneer, with a cap on its head, a firelock on its shoulder, and a match in its claw; and discharged a small cannon. The same bird also acted as if it had been wounded: it was wheeled in a little barrow, to convey it (as it were) to the hospital; after which it flew away before the company. The seventh turned a kind of windmill. And the last bird stood in the midst of some fire-works which were discharged all round it; and this without exhibiting the least sight of fear.

In solitude the Goldfinch delights to view its image in a mirror; fancying, probably, that it sees another of its own species: and this attachment to society seems to equal the cravings of nature; for it is often observed to pick up the hemp-seed, grain by grain, and advance to eat it at the mirror imagining, no doubt, that it is thus feeding in company.

If a young Goldfinch be educated under a Canary-bird, a Wood-lark, or any other singing bird, it will readily catch its song. Mr. Albin mentions a lady who had a Goldfinch which was even able distinctly to speak several words.

Towards winter these birds usually assemble in flocks. They feed on various kinds of seeds, but are more partial to those of the thistle than any others. They sometimes have been known to attain a great age. Willoughby speaks of one that was twenty-three years old; and Albin says, that they not unfrequently arrive at the age of twenty years.

THE CANARY-FINCH.

If, observes M. de Buffon, the Nightingale is the songster of the woods, the Canary-bird must be considered as the musician of the chamber. It is a social and familiar bird, capable of recollecting kindnesses, and even of some degree of attachment towards those by

whom it is fed and attended. In a state of nature we know but little of its manners and economy. Like the rest of its tribe, it feeds chiefly on seed and different kinds of grain. It inhabits the woods of Italy, Greece, and the Canary Islands; from the latter of which it appears to have been first brought into Europe, about the middle of the fourteenth century. These birds, however, are now so commonly bred in our own country, that we are not often under the necessity of crossing the ocean for them.

CANARY-FINCH.

It is not generally known, that the song of the Canary-bird is usually composed either of the Titlark's or the Nightingale's notes. Mr. Barrington saw two of these birds which came from the Canary Islands, neither of which had any song at all; and he was informed that a ship afterwards brought over a great number of them, all of which had the same defect. Most of the birds that are imported from the Tyrol, have been educated under parents, the progenitors of which were instructed by a Nightingale. The English Canary-birds have, however, more of the Titlark's than of the Nightingale's notes

Dr Darwin relates a very singular anecdote respecting one of these birds: "On observing (says he) a Canary-bird at the house of Mr. Hervey, near Tetbury, in Derbyshire, I was told that it always fainted away when its cage was cleaned; and I desired to see the experiment. The cage being taken from the ceiling, and the bottom drawn out, the bird began to tremble, and turned quite white about the root of its bill: it then opened its mouth as if for breath, and respired quick, stood up straighter on its perch hung, its wings, spread its tail, closed its eyes, and appeared quite stiff and cataleptic for nearly half an hour; and at length, with much trembling and deep respirations, came gradually to itself."

A Frenchman, whose name was Dujon, exhibited in London

twenty-four Canary-birds, many of which he said were from eighteen to twenty-five years of age. Some of these balanced themselves, head downward, on their shoulders, having their legs and tail in the air. One of them taking a slender stick in its claws, passed its head between its legs, and suffered itself to be turned round, as if in the act of being roasted. Another balanced itself, and was swung backward and forward on a kind of slack-rope. A third was dressed in military uniform, having a cap on its head, wearing a sword and pouch, and carrying a firelock in one claw: after some time sitting upright, this bird, at the word of command, freed itself from its dress, and flew away to the cage. A fourth suffered itself to be shot at, and, falling down as if dead, was put into a little wheel-barrow, and wheeled away by one of its comrades; and several of the birds were at the same time placed upon a little fire-work, and continued there quietly, and without alarm, till it was discharged.

TAME CANARY.

THE KING-BIRD, OR TYRANT FLY-CATCHER.

This well known, remarkable and pugnacious bird takes up its summer residence in all the intermediate region, from the temperate parts of Mexico to the uninhabited and remote interior of Canada. In all this vast geographical range the King-bird seeks his food and rears his young. According to Audubon, they appear in Louisiana by the middle of March, and about the 20th of April, Wilson remarked their arrival in Pennsylvania in small parties of five or six; but they are very seldom seen in Massachusetts before the middle of May. They are now silent and peaceable,

TYRANT FLY-CATCHER, OR KING-BIRD.

until they begin to pair, and form their nests, which takes place from the first to the last week in May, or early in June, according to the advancement of the season in the latitudes of forty and forty-three degrees. The nest is usually built in the orchard, on the horizontal branch of an apple or pear tree, sometimes in an oak, in the adjoining forest, at various heights from the ground, seldom carefully concealed, and firmly fixed at the bottom to the supporting twigs of the branch. The outside consists of course stalks of dead grass and wiry weeds, the whole well connected and bedded with cut-weed, down, tow, or an occasional rope-yarn, and wool; it is then lined with dry, slender grass, root fibres, and horsehair. The eggs are generally three to five, yellowish-white, and marked with a few large, well defined spots of deep and bright brown. They often build and hatch twice in the season.

OF THE FLY-CATCHERS IN GENERAL.

THE characters of this genus are, a bill flatted at the base, almost triangular, notched at the end of the upper mandible, and beset with bristles. The toes in most of the species are divided as far as the origin.

THE SPOTTED FLY-CATCHER.

The length of this species is about four inches and three quarters: the bill is dusky and beset with short bristles: the head and back are light brown, obscurely spotted with black: the wings and tail are dusky, and the former edged with white: the breast and belly are white: the throat, sides, and feathers under the wings, are tinged with red; and the legs are black.

This is one of the most mute, and most familiar of all the English summer birds. It visits them in spring, rears its young-ones, and leaves the country in September.

Mr. White says, that a pair of these birds built every year in the vines that grew on the walls of his house at Selborne. They one year inadvertently placed their nest on a naked bough, perhaps in a shady time, not being aware of the inconvenience that followed; but a hot, sunny season coming on before the brood was half fledged, the reflection of the wall became insupportable, and must inevitably have destroyed the tender young-ones, had not affection suggested an expedient, and prompted the parent birds to hover over the nest during all the hotter hours; while with wings expanded, and mouths gaping for breath, they screened off the heat from their suffering offspring.

The female lays four or five eggs: the nest is carelessly made, and consists chiefly of moss, mixed with wool and fibres, so strong, and so large, (says M. de Buffon,) that it appears surprising how so small an artificer could make use of such stubborn materials. When its offspring are able to fly, it retires with them among the higher branches of the trees, sinking and rising perpendicularly among the flies which hum below.

This bird feeds on insects, which it catches whilst on wing. It sometimes watches for its prey sitting on a branch or post, and, with a sudden spring, takes it as it flies, and then immediately returns to its station to wait for more. It is said, likewise, to be fond of some kinds of fruit. It is generally believed to have no song. The Rev. Revett Sheppard, however, informs me, that in the garden belonging to the master of Caius College, Cambridge, a Spotted Fly-catcher used frequently to sit on a rail, and entertain him with its notes, which, he says, were very pleasing, and between those of a Wagtail and Golden-crested Wren.

The Pied Fly-catcher is a rarer variety, with a white breast

THE PEWIT FLY-CATCHER

This familiar species inhabits the continent of North America, from Canada and Labrador to Texas, retiring from the Northern and Middle States at the approach of winter. How far they proceed to the south at this season is not satisfactorily ascertained; a few, no doubt, winter in the milder parts of the Union, as Wilson saw them in February in the swamps of North and South Carolina, where they were feeding on smilax berries, and occasionally even giving their well-known notes; but in the winter, and early spring of 1830, while employed in an extensive pedestrian journey from South Carolina to Florida and Alabama, I never heard or met with an individual of the species. Audubon found them abundant in the Floridas in winter.

THE PEWIT FLY-CATCHER.

This faithful messenger of spring returns to Pennsylvania as early as the first week in March, remains till October, and sometimes nearly to the middle of November. In Massachusetts, they arrive about the beginning of April, and at first chiefly frequent the woods.

Their favorite resort is near streams, ponds, or stagnant waters, about bridges, caves, and barns, where they choose to breed; and, in short, wherever there is a good prospect for obtaining their insect food.

THE AMERICAN REDSTART.

This beautiful and curious bird takes up its summer residence in almost every part of the North American continent, being found in Canada, in the remote interior near Red river in the latitude of forty-nine degrees, throughout Louisiana, Arkansas, and the maritime parts of Mexico; in all of which vast countries it familiarly breeds and resides during the mild season, withdrawing early in September to trop-

ical America, where, in the perpetual spring and summer of the larger West India islands, the species again find means of support. At length, instigated by more powerful feelings than those of ordinary want, the male, now clad in his beautiful nuptial livery, and accompanied by his mate, seeks anew the friendly but far distant natal regions of his race. In no haste, the playful Redstart does not appear in Pennsylvania until late in April. The month of May, about the close of the first week, ushers his arrival into the states of New England; but in Louisiana he is seen as early as the beginning of March. He is no pensioner upon the bounty of man. Though sometimes seen, on his first arrival, in the darkest part of the orchard or garden, or by the meandering brook, he seeks to elude observation, and now, the great object of his migrations having arrived, he retires with his mate to the thickest of the sylvan shade. Like his relative Sylvias, he is full of life and in perpetual motion. He does not, like the loitering Pewee, wait the accidental approach of his insect prey, but carrying the war amongst them, he is seen flitting from bough to bough, or at times pursuing the flying troop of winged insects from the top of the tallest tree in a zig-zag, hawk-like, descending flight, to the ground, while the clincking of the bill declares distinctly both his object and success. Then alighting on some adjoining branch, intently watching, with his head extended, he runs along upon it for an instant or two, flirting like a fan his expanded brilliant tail from side to side, and again suddenly shoots

AMERICAN REDSTART.

NEST OF THE AMERICAN REDSTART.

off like an arrow in a new direction, after the fresh game he has discovered in the distance, and for which he appeared to be reconnoitring. At first the males are seen engaged in active strife, pursuing each other in wide circles through the forest. The female seeks out her prey with less action and flirting, and in her manners resembles the ordinary Sylvias.

The nest of the Redstart is very neat and substantial; fixed occasionally near the forks of a slender hickory or beach sapling, but more generally fastened or agglutinated to the depending branches or twigs of the former; sometimes securely seated amidst the stout footstalks of the waving foliage in the more usual manner of the delicate cradle of the Indian Tailor-bird, but in the deep and cool shade of the forest, instead of the blooming bower.

THE RED-EYED VIREO, OR GREENLET.

This common and indefatigable songster appears to inhabit every part of the American continent from Labrador to the large tropical islands of Jamaica and St. Domingo; they are likewise resident in the mild table land of Mexico. Those who pass the summer with us, however, migrate to the warmer regions at the commencement of winter, as none are found at that season within the limits of the United States. The Red-eyed Vireo arrives in Pennsylvania late in April, and in New England about the beginning of May. It inhabits the shady forests or tall trees near gardens and the suburbs of villages, where its loud, lively, and energetic song is often continued, with little intermission, for several hours at a time, as it darts and pries among the thick foliage in quest of insects and small Caterpillars. From its first arrival, until August, it is the most distinguished warbler of the forest, and when almost all the other birds have become mute, its notes are yet heard with unabated vigor. Even to the 5th of October, still enlivened by the feeble rays of the sun, he faintly recalls his song, and plaintively tunes a farewell to his native woods.

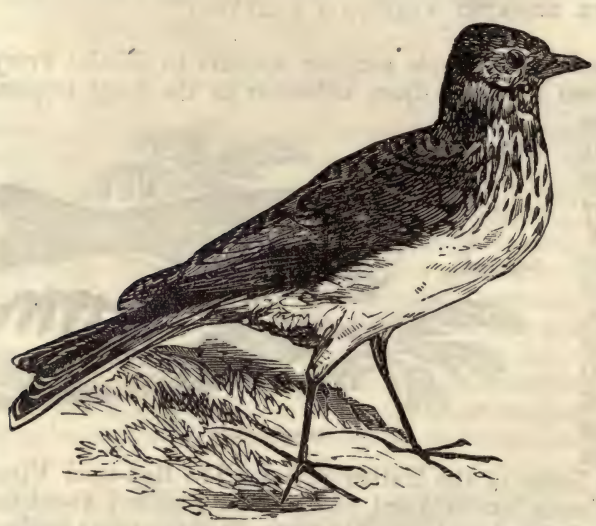
RED-EYED VIREO.

OF THE LARKS IN GENERAL.

In this tribe the bill is straight, slender, bending a little towards the end, and sharp-pointed. The nostrils are covered with feathers and bristles; and the tongue is cloven at the end. The toes are divided to the origin; and the claw of the back toe is very long, and either straight or very little bent.

THE SKY-LARK.

The Sky-lark forms its nest on the ground, generally between two clods of earth, and lines it with dried grass and roots. The female lays four or five eggs, which are hatched in about a fortnight; and she generally produces two broods in the year. When hatched, the mother watches over them with a truly maternal affection; she may then be seen fluttering over their heads, directing their motions, anticipating their wants, and guarding them from danger.



SKY-LARK.

The instinctive warmth of attachment which the female Sky-lark bears towards her own species, often discovers itself at a very early period, and even before she is capable of becoming a mother; which might be supposed to precede, in the order of nature, the maternal solicitude. "In the month of May (says M. de Buffon) a young hen-bird was brought to me, which was not able to feed without assistance. I caused her to be educated; and she was hardly fledged, when I received from another place a nest of three or four unfledged Sky-larks. She took a strong liking to these new comers, which were scarcely younger than herself; she tended them night and day, cherished them beneath her wings, and fed them with her bill. Nothing could interrupt her tender offices. If the young-ones were torn from her she flew to them as soon as she was liberated, and would

not think of effecting her own escape, which she might have done a hundred times. Her affection grew upon her: she neglected food and drink; she now required the same support as her adopted offspring, and expired at last, consumed with maternal anxiety. None of the young-ones survived her. They died one after another; so essential were her cares, which were equally tender and judicious."

The common food of young Sky-larks is worms and insects; but after they are grown up they live chiefly on seeds, herbage, and most other vegetable substances. These birds are easily tamed, and they become so familiar as to eat off the table, and even to alight on the hand; but they cannot cling by their toes, on account of the form of the hinder toe, which is straight and very long. This is the reason why they never perch on trees.

The Lark commences his song early in spring, and continues it during the whole of the summer. It is heard chiefly in the morning and evening, and the Lark is one of those few birds that chaunt their mellow notes on the wing. Thomson elegantly describes it as the leader of the warbling choir:—

> Up springs the Lark,
> Shrill-voiced and loud, the messenger of morn:
> Ere yet the shadows fly, he, mounted, sings
> Amid the dawning clouds, and from their haunts
> Calls up the tuneful nations.

The Lark mounts almost perpendicularly, and by successive springs, into the air; where it hovers at a vast height. Its descent is in an oblique direction; unless threatened by some ravenous bird of prey, or attracted by its mate, when it drops to the ground like a stone. On its first leaving the earth, its notes are feeble and interrupted; but as it rises, these gradually swell to their full tone. There is something in the concomitant scenery, that renders the music of the Lark peculiarly delightful. The placid landscape and various rural charms, all contribute to heighten our relish for its pleasing song.

These birds become musical in the spring, and continue so for several months; but in winter their song forsakes them. They then assemble in flocks, grow fat, and are caught in vast numbers by the bird-catchers. As many as four thousand dozen have been taken in the neighborhood of Dunstable, between September and February; but this holds no proportion to what are sometimes caught in different parts of Germany, where there is a tax upon them. Keysler says, that at one time this tax produced six thousand dollars every year to the city of Leipsic.

Larks that are caught in the day-time are taken in clap-nets, of fifteen yards in length, and two and a half in breadth; and they are enticed by bits of looking-glass fixed in a piece of wood, and placed in the middle of the nets. These are put into quick whirling motion, by a string which the larker commands; he also makes use of a decoy-bird. This kind of net is used only till the fourteenth of November; for the Larks will not frolic in the air, and consequently cannot be

inveigled in this manner, except in fine sunny weather. When the weather becomes gloomy, the larker changes his engine; and makes use of a trammel-net, twenty-seven or twenty-eight feet long, and five broad. This is put on two poles, eighteen feet long, and carried by men, who pass over the fields, and quarter the ground as a setting-dog would. When the men hear or feel that a Lark has hit the net, they drop it down, and thus the birds are taken.

THE WOOD-LARK.

The Wood-lark is somewhat smaller than the Sky-lark, and its form is shorter and more thick. The top of the head and back are marked with large black spots, edged with pale reddish brown. The head is surrounded with a whitish coronet of feathers, reaching from eye to eye. The throat is of a yellowish white, spotted with black. The breast is tinged with red; the belly is white; and the coverts of the wings are brown edged with white and dull yellow. The quill-feathers are dusky; the exterior edges of the first white, and of the others yellow; and their tips are blunt and white. The first feather of the wing is shorter than the second: in the Sky-lark they are nearly equal. The tail is black, the outermost feather tipped with white: the exterior web, and the inner side of the interior web, are also white; in the second feather the exterior web only is white. The legs are of a dull yellow.

In many respects, both of habit and appearance, these birds differ from the Sky-lark. They perch as well in trees as on the ground; but this they do only on the largest branches, where they are able to secure their hold without positively embracing the stems with their toes. The Sky-lark forms its nest amongst grass near the bottom of a hedge, or in lays where the grass is rank and dry. The fabric is of loose texture, and constructed of withered herbs, and fibrous roots, with a few horse-hairs in the inside. It has scarcely any hollow, the bottom being nearly on a level with the sides. The whole nest is seldom much more than half an ounce in weight. The number of eggs is about four; these are of a pale bloom-color, beautifully mottled, and clouded with red and yellow.

The young birds are tender, and not easily to be reared in a cage. When first taken from the nest, they should be fed with raw sheep's heart, or other lean fresh meat, mixed with hard-boiled egg, a little bread, and bruised hemp-seed. These must be chopped together as fine as possible, and moistened with water.

From what circumstance these birds have obtained the appellation of Wood-larks, unless it be from their building in thickets, is difficult to say; since, like the common species, they are for the most part found only on large and cultivated plains.

Their song is stated more to resemble that of the Sky-lark. They sing not only in the day-time, but during the night; not only whilst they are in flight, but also when perched upon the trees. Like the Sky-larks, they assemble in considerable flocks during frosty weather.

Their usual food consists of small Beetles, Caterpillers, and other insects, as well as of the seeds of numerous kinds of wild plants.

THE MEADOW PIPIT.

The Meadow Pipit, more commonly called the Titlark, resembles the true Larks in the long hind claw and peculiar plumage, but is pointed out as distinct, by the different color of the bill. Like the Sky-lark, it sings while in the air, but sometimes also pours forth its musical strains while settled upon the ground. It feeds principally on slugs, worms, and insects, which it chases with much activity, after the manner of the Wagtails, even vibrating its tail like them. Hilly grounds, commons, and meadows are its chief resort in summer, but during September and October flocks of these birds may be seen congregated in turnip fields, and in the winter they seek the protection of the warm hedge-rows.

THE MEADOW PIPIT.

The nest of the Titlark is made on the ground, and concealed by a tuft of grass. There are usually five or six eggs, light brown in color, spotted with a darker tint. The length of the bird is six inches

THE GRASSHOPPER-LARK.

This is a very small species. Its bill is slender and dusky. The upper parts of the body are of a variegated greenish brown. The under parts are of a yellowish white, speckled irregularly on the neck and breast. The feathers of the wings and tail are of a palish dusky brown. The tail is long, and somewhat wedge-shaped.

THE GRASSHOPPER LARK.

Nothing, says the Rev. Mr. White, can be more amusing than the sibilous whisper of this little bird, which seems to be close by, though it may be an hundred yards distant; and, when close at your ear, is scarcely any louder than when a great way off. The Grasshopper-lark usually begins his note about the middle of April, and did we not know that the Grasshopper insects are not yet

hatched, it would not be easy to persuade one's self that the note uttered by this lark was in reality the note of a bird.

During the season of love, the male has great delight in uttering its song from some bush adjacent to its nest. Its warbling is extremely simple, but at the same time is sweet, and by no means inharmonious. These birds also sing during their flight.

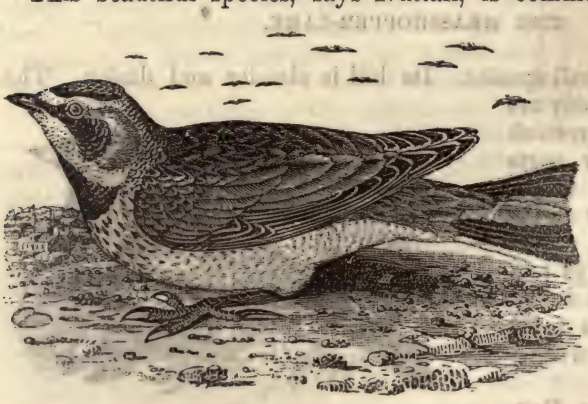
They are artful little creatures, generally skulking in the thickest part of the bushes, and sometimes when concealed, singing at the distance of a little more than a yard from any person. Mr. White, speaking of one of them, says, that, in order to find it, he was under the necessity of desiring a person to go on the other side of a hedge that it haunted. The bird even then ran before them, creeping like a Mouse, for more than a hundred yards, through the bottom of the thorns, yet it could not be compelled to come into their sight. Yet this bird, early in the morning, and when undisturbed, would sing on the top of a twig, gaping and shivering its wings with great apparent delight.

The nest of the Grasshopper Lark is formed in some solitary place, and generally concealed under some green turf. The eggs are seldom more than five in number, and these are marked towards the large end with brown. The young-ones are not unfrequently devoured by snakes.

Although these birds are able to perch on small twigs, yet their hinder claw, as in most of the other species, is of considerable length.

THE SHORE-LARK.

This beautiful species, says Nuttall, is common to the north of the old and new continent, but, as in some other instances already remarked, the Shore-lark extends its migrations much further over America than over Europe and Asia. Our bird was met with in the Arctic regions by the late adventurous voyagers; and Mr. Bullock saw them in the winter around the city of Mexico; so that in their migrations over this continent they spread themselves across the whole habitable Northern hemisphere to the very equator; while in Europe, according to the careful observations of Temminck, they are unknown to the south of Germany. Pallas



THE SHORE LARK.

met with these birds round Lake Baikal and on the Wolga, in the 53d degree of latitude. Westward they have also been seen in the interior of the United States, along the shores of the Missouri.

They arrive in the Northern and Middle States late in the fall or commencement of winter; in New England they are seen early in October, and disappear generally on the approach of the deep storms of snow, though straggling parties are still found nearly throughout the winter. In the other States to the South they are more common at this season, and are particularly numerous in South Carolina and Georgia, frequenting open plains, old fields, common grounds, and the dry shores and banks of bays and rivers, keeping constantly on the ground, and roving about in families under the guidance of the older birds, who watching for any approaching danger, give the alarm to the young in a plaintive call, very similar to that which is uttered by the Sky-lark in the same circumstances. Inseparable in all their movements, like the hen and her fostered chickens, they roost together in a close ring or company, by the mere edge of some sheltering weed or tuft of grass on the dry and gravelly ground; and, thickly and warmly clad, they abide the frost and the storm with hardy indifference. They fly rather high and loose, in scattered companies, and follow no regular time of migration, but move onward only as their present resources begin to fail. They are usually fat, esteemed as food, and are frequently seen exposed for sale in our markets. Their diet, as usual, consists of seeds which still remain on the grass and weeds they frequent, and they swallow a considerable portion of gravel to assist their digestion. They also collect the eggs and dormant larvæ of insects when they fall in their way.

OF THE WARBLERS IN GENERAL.

THE Warblers have a weak and slender bill; small and somewhat depressed nostrils; and the tongue cloven at the end. The exterior toe is joined beneath to the base of the middle one.

Most of these birds prey on insects. Some of them are gregarious, and migrate at the approach of the cold weather, to warmer climates. This is a very extensive tribe, containing in the whole above a hundred and seventy species, of which England boasts nearly twenty.

THE NIGHTINGALE.

The length of the Nightingale is about six inches. The upper parts of the body are of a rusty brown color, tinged with olive; the under parts are of a pale ash-color, almost white at the throat and belly.

The Nightingale, though greatly and deservedly esteemed for the excellence of its song, is not remarkable for variety or richness of colors. It usually leaves us about the middle of September, in order, as it is supposed to retire to the distant regions of Asia. This bird

returns regularly in the first days of April, and about a month afterwards begins to construct its nest. The females hatch twice, and sometimes even three times, in the year.

NIGHTINGALE.

It is very remarkable, that all the gay and brilliant birds of America should be entirely destitute of that pleasing power of song which gives so peculiar a charm to the groves and fields of Europe.

NIGHTINGALE AND NEST.

The Nightingale seems to have been fixed upon almost universally as the most exquisite of singing-birds; and this superiority it certainly may boldly challenge. One reason, however, of this bird's being more attended to than others is, the circumstance of its singing in the night.

Mr. Barrington kept a fine Nightingale for three years, during which time he paid particular attention to its song. Its tone was infinitely more mellow than that of any other bird; though at the same time, by a proper

exertion, it could be excessively brilliant. When this bird *sang its song round*, in its whole compass, he observed sixteen different beginnings and closes; at the same time that the intermediate notes were commonly varied in their succession with so much judgment, as to produce a most pleasing variety. Another point of superiority in the Nightingale, is its continuance of song without a pause; which Mr. Barrington observed to be sometimes not less than twenty seconds. Whenever respiration, however, became necessary, it was taken with as much judgment as by an opera-singer.

In this place it may be remarked, that the Nightingales in general, in a wild state, do not sing above ten weeks in the year; while those confined in a cage continue their song for nine or ten months; and a caged Nightingale sings much more sweetly than those which we hear abroad in the spring. The latter, as the bird-fanciers term it, are so *rank* that they seldom sing anything but short and loud jerks; which, consequently, cannot be compared to the notes of a caged bird, since the instrument is thus overstrained.

From the dissections of several birds made by Mr. John Hunter, at the request of the Hon. Daines Barrington, it appeared that, in the best singers, the muscles of the larynx were the strongest. Those in the Nightingale were stronger than in any other bird of the same size. When we consider the size of many singing birds, it is really amazing to what a distance their notes can be heard. It is supposed that the song of a Nightingale may be heard above half a mile if the evening be calm.

Nightingales will adopt the notes of other birds; and they will even chaunt the stiff airs of a Nightingale-pipe. They may be instructed to sing by turns with a chorus, and to repeat their couplet at the proper time. Mr. Stackhouse, of Pendarvis in Cornwall, informs me that he has remarked of the Nightingale that it will modulate its voice to any given key: he says, if any person whistle a note, the bird will immediately try, in its strain, an unison with it. Nightingales may also be taught to articulate words.

Nightingales are solitary birds; never associating in flocks, like many of the smaller birds, but hiding themselves in the thickest parts of hedges and bushes, and seldom singing but during the night.

The London bird-catchers catch Nightingales in net-traps, (somewhat larger than cabbage-nets,) the bottoms of which are surrounded with an iron ring. These are baited with meal-worms from bakers' shops; and ten or a dozen birds have sometimes been caught in a day by this means

THE PENSILE WARBLER.

The Pensile Warbler is nearly five inches long. The bill is dusky; the head grayish black; and the back deep gray. Round the eye there is a white streak, and between that and the bill a range of yellow dots. The throat, neck, and breast, are yellow. The belly is white; and the sides of the neck and body are dotted with black spots. The

wing-coverts are white and black, in bands. The tail is dark gray, having the four outer feathers marked with large spots of white.

The sagacity displayed by this bird in building and placing its nest, is truly remarkable. She does not fix it at the forking of the branches, as is usual with most other birds; but she suspends it to a kind of binders, which hang from tree to tree, but particularly from branches that bend over the rivers and deep ravines. The nest consists of dry blades of grass, the ribs of leaves, and exceedingly small roots, interwoven with great art; it is fastened on, or rather it is worked into the pendent strings. It is in fact a small bed, rolled into a ball, so thick and compact as to exclude the rain; and it rocks in the wind without receiving any injury.

THE PENSILE WARBLER.

But the elements are not the only enemies against which this bird has to struggle; with wonderful sagacity it provides for the protection of its nest from other accidents. The opening is neither made on the top nor the sides of the nest, but at the bottom. Nor is the entrance direct. After the bird has made its way into the vestibule, it must pass over a kind of partition, and through another aperture, before it descends into the abode of its family. This lodgment is round and soft; being lined with a species of lichen, which grows on the trees, or with the silky down of plants.

The birds of this species have a very delicate song, which is continued throughout the year. They are natives of St. Domingo, and some other of the West India islands, where they feed chiefly on insects and fruit.

THE COMMON WAGTAIL.

These active and lively little birds run about the sides of ponds and small streams, in search of insects and worms; and in the spring and autumn are constant attendants on the plough, for the sake of the worms thrown up by that instrument.

COMMON WAGTAIL.

The generality of the Wagtails disappear in the autumn; but how they dispose of themselves during the winter, is somewhat difficult to account for. They are often to be seen even in the middle of winter. If there happen to be a fine day, and the sun shine bright, they are sure to make their appearance; chirping briskly, and seeming delighted with the fine weather, though they had not perhaps been seen for three weeks or a month before. Whence then do they come?

Certainly not from a far distant country, there not being time for a very long journey in the space of a single day; and, besides, they never seem to be tired or lifeless, but are very brisk and lively, on such occasions.

THE YELLOW WAGTAIL.

The Yellow Wagtail is very similar in habits to the more common Pied Wagtail, but the yellow tints of some of its feathers, somewhat resembling those of the Yellow Hammer, at once distinguish it.

YELLOW WAGTAIL.

THE WHEAT-EAR.

The head and back of the male are of a light gray, tinged with red. Over each eye there is a white line: beneath that is a broad black stroke, which passes across each eye to the hinder part of the head. The rump and lower half of the tail are white: the upper half black. The underside of the body is white, tinged with yellow: on the neck this color inclines to red. The quill-feathers are black, edged with reddish brown. The colors of the female are more dull: this sex wants the black marks across the eyes; and the bar of white on the tail is narrower than that in the male.

This bird visits England annually in the middle of March, and leaves in September. The females come first, about a fortnight before the males; and they continue to come until the middle of May. In some parts of England they are seen in great numbers, and are much esteemed for the table. About Eastbourn, in Sussex, they are caught by means of snares made of horse-hair, placed beneath a long turf. Being very timid birds, the motion even of a cloud, or the appearance of a Hawk, will immediately drive them into the traps. These traps are first set every year on St. James's day, the twenty-fifth of July; soon after which they are caught in astonishing numbers, considering that they are not gregarious, and that more than two or three are scarcely ever seen flying together. The number annually ensnared in the district of Eastbourn alone, is said to amount to nearly two thousand dozen. The birds caught are chiefly young-ones, and they are invariably found in the greatest numbers when an easterly wind prevails; they always come against the wind. A gentleman informed Mr. Markwick of Cattsfield, that his father's shepherd once caught eighty-four dozen of them in a

day. Great quantities of Wheat-ears are eaten on the spot by the inhabitants; others, are picked and sent to London poulterers; and many are potted, being much esteemed in England, as the Ortolons are on the continent.

The vast abundance of these birds on the downs about Eastbourn, is supposed by Mr. Pennant to be occasioned by a species of fly, their favorite food, that feeds on the wild thyme, and abounds on the adjacent hills.

A few of the birds breed in the old Rabbit-burrows there. Their nest is large, and made of dried grass, Rabbits' down, a few feathers, and horse-hair. The eggs are from six to eight in number, and of a light color.

THE RED-BREAST.

The Red-breast has usually been reckoned among the birds of passage; but, as M. de Buffon has elegantly expressed himself, the departure in the autumn "not being proclaimed among the Red-breasts, as among other birds at that season collected into flocks, many stay behind; and these are either the young and inexperienced, or some which can derive support from the slender resources of winter. In that season they visit our dwellings, and seek the warmest and most sheltered situations; and, if any one happens still to continue in the woods, it becomes the companion of the faggot-maker, cherishes itself at his fire, pecks at his bread, and flutters the whole day round him, chirping its slender *pip*. But, when the cold grows more severe, and thick snows cover the ground, it approaches our houses, and taps at the window with its bill, as if to entreat an asylum, which is cheerfully granted; and it repays the favor by the most amiable familiarity, gathering the crumbs from the table, distinguishing affectionately the people of the house, and assuming a warble, not indeed so rich as that in the spring, but more delicate. This it retains through all the rigors of the season; to hail each day the kindness of its host, and the sweetness of its retreat. There it remains tranquil, till the returning spring awakens new desires, and invites to other pleasures: it now becomes uneasy, and impatient to recover its liberty."

RED-BREAST

The Red-breast generally builds its nest among the roots of trees, in some concealed spot near the ground. This is composed of dried leaves, mixed with hair and moss, and lined with feathers. The female lays from five to seven eggs. In order the more successfully to conceal its nest, we are told that it covers it with leaves, suffering only a narrow winding entrance under the heap to be left.

This bird feeds principally on insects and worms; and its skill in preparing the latter is somewhat remarkable. It takes a worm by one extremity, in its beak, and beats it on the ground till the inner part comes away. Then seizing it in a similar manner by the other end, it entirely cleanses the outer part, which alone it eats.

The general familiarity of this bird has obtained for it a peculiar denomination in several countries. The inhabitants of Bornholm call it *Tommi Liden;* the Norwegians, *Peter Ronsmad;* the Germans, *Thomas Gierdet;* and we give to it the familiar appellation of *Robin Red-breast.*

THE AMERICAN ROBIN, OR MIGRATING THRUSH.

The familiar and welcome Robin is found in summer throughout the North American continent from the desolate regions of Hudson's Bay, in the 53d degree, to the table land of Mexico; it is likewise a denizen of the territory of the Oregon, on the western base of the Rocky Mountains. In all this vast space, the American Fieldfare rears its young, avoiding only the warmer maritime districts, to which, however, they flock for support during the inclemency of winter. In like manner the common Fieldfare migrates at a late season from the northern districts of Siberia and Lapland to pass the winter in the milder parts of Europe. The Robin has no fixed time for migration, nor any particular rendezvous; they retire from the higher latitudes only as their food begins to fail, and so leisurely and desultory are their movements, that they make their appearance in straggling parties even in Massachusetts, feeding on winter berries, till driven to the south by deep and inundating snows. At this season they swarm in the Southern States, though they never move in large bodies. The holly, prinos, sumach, smilax, candle-berry myrtle, and the Virginian juniper now afford them an ample repast in the winter, in the absence of the more juicy berries of autumn, and the insects and worms of the milder season. Even in the vicinity of Boston, flocks of Robins are seen, in certain seasons, assembling round open springs in the depth of

AMERICAN ROBIN.

winter, having arrived probably from the colder interior of the state; and in those situations they are consequently often trapped and killed in great numbers

THE GROUND ROBIN, OR TOWWEE FINCH.

It is a very common, humble, and unsuspicious bird, dwelling commonly in the thick dark woods and their borders, flying low, and frequenting thickets near streams of water, where it spends much time in scratching up the withered leaves for worms and their larvæ, and it is particularly fond of Wireworms (or *Iuli*), as well as various kinds of seeds and gravel. Its rustling scratch among the leafy carpet of the forest is, often, the only indication of its presence, excepting now and then a call upon its mate (*tow-wee, tow-wee, tow-weet,*) with which it is almost constantly associated. While thus busily engaged in foraging for subsistence, it may be watched and approached without showing any alarm; and taking a look often at the observer, without suspicion, it scratches up the leaves as before. This call of recognition is uttered in a low and somewhat sad tone, and if not soon answered, it becomes louder and interrogatory, *tow-wee, towee?* and terminates often with *toweet.* They are accused of sometimes visiting the pea-fields to feed, but occasion no sensible damage.

GROUND ROBIN.

THE WREN.

The Wren is found throughout Europe and America. Its nest is curiously constructed, chiefly of moss, and lined with feathers: in shape it is almost oval, with only one small entrance. This nest is generally found in some corner of an out-house, stack of wood, or hole in a wall, near our habitations; but when the Wren builds in woods, it generally does this in some bush near the ground, on the

stump of a tree, or even on the ground. The female lays from ten to eighteen eggs. The materials of the nest are generally adapted to the place where it is formed. If against a hay-rick, its exterior is composed of hay: if against the side of a tree clad with white lichens, it is covered with that substance; and, if built against a tree covered with green moss, or in a bank, its exterior bears a similar correspondence.

THE WREN.

The lining is invariably of feathers. The Wren does not, as is usual with most other birds, begin the bottom of its nest first. When against a tree, its primary operation is to trace upon the bark, the outline, and thus to fasten it with equal strength to all parts. It then, in succession, closes the sides and top, leaving only a small hole for entrance. If the nest be placed under a bank, the top is first begun and is well secured in some small cavity; and by this the fabric is suspended.

The song of the Wren is much admired; being a pleasing warble, and louder than could be expected from the size of the bird. This it continues throughout the year: these birds have been heard to sing unconcerned even during a fall of snow. They also sing very late in the evening; though not, like the Nightingale, after dark.

THE CHAFFINCH, OR PIEFINCH.

The Chaffinch or Piefinch, as it is often called, is so well known as to need no description. It is chiefly remarkable for the beautiful nest which it constructs. The forks of a thorn or a wild crab-tree are favorite places for the nest, which is composed of mosses, hair, wool, and feathers, covered on the exterior with lichens, and mosses, so exactly resembling the bough on which the nest is placed, that the eye is often deceived by its appearance. In the nest four or five very pretty eggs are laid: these are of a reddish-brown color, sparely marked with deep brown spots, especially towards the larger end.

THE CHAFFINCH.

The name Cœlebs or Bachelor, is given to this bird, because the females quit this country about November, leaving large flocks of males behind them.

THE SISKIN.

The Siskin is hardly to be considered more than an occasional visitor in England, but in Scotland it sometimes breeds, as may be seen from the following extract:—

"The Siskin is a common bird in all the high parts of Aberdeenshire, which abound in fir-woods. They build generally near the extremities of the branches of tall fir-trees, or near the summit of the tree. Sometimes the nest is found in plantations of young fir-wood. In one instance, I met with a nest not three feet from the ground. I visited it every day until four or five eggs were deposited. During incubation the female showed no fear at my approach. On bringing my hand close to the nest, she showed some inclination to pugnacity, and tried to frighten me away with her open bill, following my hand round and round when I attempted to touch her. At last she would only look anxiously round to my finger without making any attack on me. The nest was formed of small twigs of birch or heath outside, and neatly lined with hair." Its eggs are a bluish-white spotted with purplish-red.

THE SISKIN.

THE HEDGE-ACCENTOR, OR HEDGE-SPARROW.

The Hedge-Accentor, or Hedge-Sparrow, is one of our commonest English birds, closely resembling the common Sparrow, in appearance. The nest is built in holes, and contains five blue eggs like those of the Redstart, but stouter in shape, and of a deeper blue.

It is often very bold when engaged in sitting, and will permit a near approach without leaving the nest. I have repeatedly visited the nest of one of these birds while the female was sitting, and have parted the boughs of the shrub where the nest was placed, in order to get a good view, while the hen bird still sat quietly in the nest anxiously watching every movement but not attempting to stir.

HEDGE ACCENTOR.

THE CAT-BIRD.

This quaint and familiar songster passes the winter in the southern extremities of the United States, and along the coast of Mexico, from whence, as early as February, they arrive in Georgia. About the middle of April they are first seen in Pennsylvania, and at length leisurely approach New England, by the close of the first or beginning of the second week in May. They continue their migration also to Canada.

THE CAT-BIRD.

The Cat-bird often tunes his cheerful song before the break of day, hopping from bush to bush, with great agility after his insect prey, while yet scarcely distinguishable amidst the dusky shadows of the dawn. The notes of different individuals vary considerably. A quaint sweetness, however, prevails in all his efforts, and his song is frequently made up of short and blended imitations of other birds, given, however, with great emphasis, melody, and variety of tone; and, like the Nightingale, invading the hours of repose, in the late twilight of a summer's evening, when scarce another note is heard, but the hum of the drowsy beetle, his music attains its full effect, and often rises and falls with all the swell and studied cadence of finished harmony. During the heat of the day, or late in the morning, the variety of his song declines, or he pursues his employment in silence and retirement.

THE AMERICAN FIERY-CROWNED KINGLET.

This diminutive bird is found, according to the season, not only throughout North America, but even in the West Indies. A second species with a Fiery Crest (*R. ignicapillus*), and a *third* indigenous to Asia, are very nearly related to the present; the first having been generally confounded with it, or considered as a variety of the same

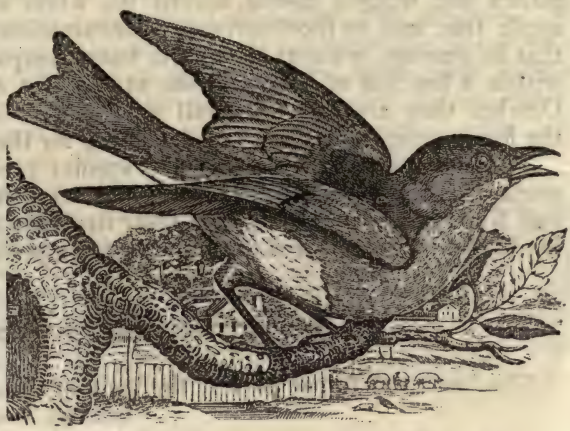
species. Learned ornithologists have referred our bird without hesitation to the Fiery-crested Wren, with which, however, it only agrees in the brilliancy of the crown; and, instead of being less, is indeed larger than the true Golden-crested species. Like the former, they appear associated only in pairs, and are seen on their southern route, in part of Massachusetts, a few days in October, and about the middle of the month, or a little earlier or later according to the setting in of the season, as they appear to fly before the desolating storms of the northern regions, whither they retire about May to breed. Some of these birds remain in Pennsylvania until December or January, proceeding probably but little farther south during the winter. They are not known to reside in any part of New England, retiring to the remote and desolate limits of the farthest north.

THE BLUE-BIRD.

This well known and familiar favorite inhabits almost the whole eastern side of the continent of America, from the 48th parallel to the very line of the tropics. Some appear to migrate in winter to the Bermudas and Brahama islands, though most of those which pass the summer in the North only retire to the Southern States, or the table land of Mexico. In South Carolina and Georgia they were abundant in January and February, and even on the 12th and 28th of the former month, the weather being mild. a few of these wanderers warbled out their simple notes from the naked limbs of the long-leaved pines. Sometimes they even pass the winter in Pennsylvania, or at least make their appearance with almost every relenting of the severity of the winter or warm gleam of thawing sunshine. From this circumstance of their roving about in quest of their scanty food, like the hard-pressed and hungry Robin Red-breast, who by degrees gains such courage from necessity, as to enter the cottage for his

THE BLUE-BIRD.

allowed crumbs; it has without foundation, been supposed that our Blue-bird, in the intervals of his absence, passes the tedious and stormy time in a state of dormancy; but it is more probable that he flies to some sheltered glade, some warm and more hospitable situation, to glean his frugal fare from the berries of the cedar, or the wintry fruits which still remain ungathered in the swamps. Defended from the severity of the cold, he now also, in all probability, roosts in the hollows of decayed trees, a situation which he generally chooses for the site of his nest. In the South, at this cheerless season, they are seen to feed on the glutinous berries of the misletoe, the green-briar, and the sumach. Content with their various fare, and little affected by the extremes of heat and cold, they breed and spend the summer from Labrador to Natchez, if not to Mexico, where great elevation produces the most temperate and mild of climates. They are also abundant, at this season, to the west of the Mississippi, in the States of Missouri and Arkansas.



BLUE-BIRD AND NEST.

THE BLACK-THROATED GREEN WARBLER.

This rather rare species, says Nuttall, arrives in Pennsylvania from its tropical winter-quarters towards the close of April or begining of May. About the 12th of the latter month it is seen in some parts of Massachusetts; but never more than a single pair are seen together. At this season, a silent individual may be occasionally observed for

THE BLACK-THROATED GREEN WARBLER.

an hour at a time, carefully and actively searching for small Caterpillars and winged insects, amidst the white blossoms of the shady apple tree, and so inoffensive and unsuspicious is the little warbler, that he pursues, without alarm, his busy occupation, as the spectator, within a few feet of him, watches at the foot of the tree. Early in October they are seen in small numbers roving restlessly through the forest, preparatory to their departure for the South.

Though the greater part of the species probably proceed farther north to rear their young, a few spend the summer in the Middle and Northern States; but, from their timorous and retiring habits, it is not easy to trace out their retreats at the period of breeding.

THE GOLDEN-CRESTED WREN.

THE GOLDEN-CRESTED WREN.

The head and upper part of the body of this Wren, are of a deep reddish brown: above each eye there is a stroke of white: the back, and the coverts of the wings and tail, are marked with slender transverse black lines; the quill-feathers with bars of black and red. The throat is of a yellowish white. The belly and sides are crossed with narrow dusky and pale reddish-brown lines. The tail is crossed with dusky bars.

The song of this beautiful little bird, the smallest of all the British feathered race, is extremely delicate and pleasing. It is not much unlike, but it is not quite so loud as, that of the Common Wren. The Golden-crested Wren may be easily known in winter by its shrill squeak, somewhat resembling the crinking of a Grasshopper. Except in the frosts, it continues its song during the whole year. These birds are very agile: they are almost continually in motion, fluttering from branch to branch, creeping on all sides of the trees, clinging to them in every situation, and often hanging with their backs downward, in the manner of the Titmice.

Their food consists chiefly of minute insects, which they find in the crevices of the bark of trees, or catch nimbly on the wing. They also eat the eggs of insects, small worms, and various kind of seeds. They delight to frequent the largest trees, such as oaks, elms, and firs.

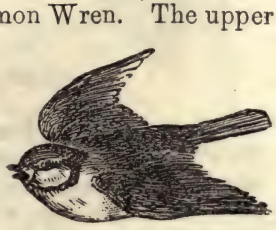
The nest of the Golden-crested Wren is an interesting fabric. It somewhat resembles that of the Chaffinch; and is frequently formed amongst the leaves at the tip of a branch of a fir-tree, where it swings about in high winds, like a pendulum. It is oval, very deep,

and has a small hole near the middle, for the ingress and egress of the bird. The materials composing its exterior are different species of moss; and within, it is lined with wool, hair, and feathers. The female lays from ten to eighteen eggs, and not unusually brings up as many young-ones. "It may be ranked among those daily miracles of which we take no notice, that this bird should feed so great a number as this without passing over one, and that also in utter darkness." The eggs are, in size, scarcely larger than peas, and are of a white color, sprinkled with small dull spots.

These birds are found in various parts of Europe, Asia and America. They are said to bear well every change of temperature, from the greatest degree of heat to that of the severest cold. They continue with us during the whole year: but Mr. Pennant states that they cross annually from the Orkneys to the Shetland islands, where they breed, and from which they return before the winter. This is a long flight (sixty miles) for so small a bird.

THE WILLOW-WREN.

This bird is somewhat larger than the Common Wren. The upper parts of the body are of a pale olive-green; the under parts are pale yellow, and a streak of yellow passes over the eyes. The wings and tail are brown, edged with yellowish green; and the legs are yellowish.



THE WILLOW-WREN.

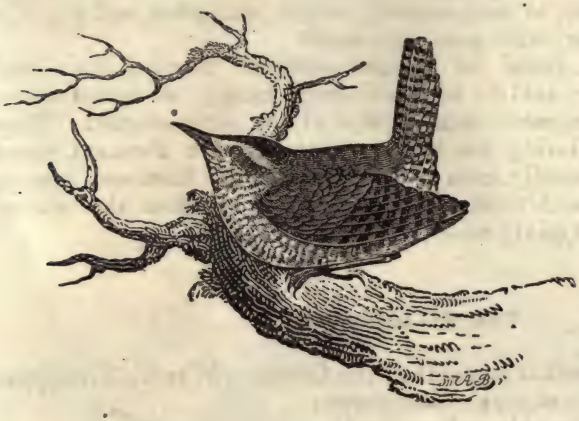
The Willow-Wren is not uncommon in many parts of England. It is migratory, visiting there usually about the middle of April, and taking its departure towards the end of September. The females construct their nests in holes at the roots of trees, in hollows of dry banks and other similar places. These are round, and not unlike the nest of the Wren. The eggs are dusky white, marked with reddish spots; and are five in number.

A Willow-Wren had built in a bank of one of the fields of Mr. White, near Selborne. This bird a friend and himself observed, as she sat in her nest; but they were particularly careful not to disturb her, though she eyed them with some degree of jealousy. Some days afterwards, as they passed the same way, they were desirous of remarking how the brood went on; but no nest could be found, till Mr. White happened to take up a large bundle of long green moss, which had been thrown as it were carelessly over the nest, in order to mislead the eye of any impertinent obtruder.

The Willow-Wren may justly be termed the Nightingale of the northern snowy countries of Europe. It settles on the most lofty branches of the birch-trees, and makes the air resound with its bold and melodious song.

THE AMERICAN HOUSE-WREN.

This lively, cheerful, capricious, and well known little minstrel, says Nuttall, is only a summer resident in the United States. Its northern migrations extend to Labrador. But it resides and rears its young principally in the Middle States. My friend, Mr. Say, also observed this species near Pembino, beyond the sources of the Mississippi, in the Western wilderness of the 49th degree of latitude. It is likewise said to be an inhabitant of Surinam within the tropics, where its delightful melody has gained it the nickname of the Nightingale. This region, or the intermediate country of Mexico, is probably the winter quarters of our domestic favorite. In Louisiana it is unknown even as a transient visitor, migrating apparently to the east of the Mississippi, and sedulously avoiding the region generally inhabited by the Carolina Wren. It is a matter of surprise how this, and some other species, with wings so short and a flight so fluttering, are ever capable of arriving and returning from such distant countries. At any rate, come from where he may, he makes his appearance in the middle States about the 12th or 15th of April, and is seen in New England in the latter end of that month or by the beginning of May. They take their departure for the South towards the close of September, or early in October, and are not known to winter within the limits of the Union.



AMERICAN HOUSE-WREN.

Some time in the early part of May, our little social visitor enters actively into the cares as well as pleasures which preside instinctively over the fiat of propagation. His nest, from preference, near the house, is placed beneath the eaves, in some remote corner under a shed, outhouse, barn, or in a hollow orchard tree; also in the deserted cell of the Woodpecker, and, when provided with the convenience, in a wooden box along with the Martins and Blue-birds. He will make his nest even in an old hat, nailed up, and perforated with a hole for entrance, or the skull of an Ox stuck upon a pole; and Audubon saw one deposited in the pocket of a broken down carriage. So pertinacious is the House Wren in thus claiming the convenience and protection of human society, that according to Wilson, an instance once

occurred where a nest was made in the sleeve of a mower's coat, which, in the month of June, was hung up accidentally for two or three days in a shed near a barn.

THE CAROLINA, OR MOCKING WREN.

THIS remarkable, mimicking, and Musical Wren, says Nuttall, is a constant resident in the Southern States, from Virginia to Florida, but is rarely seen at any season north of the line of Maryland or Delaware, though, attracted by the great river courses, they are abundant from Pittsburg to New Orleans. A few individuals stray, in the course of the spring, as far as the line of New York, and appear in New Jersey and the vicinity of Philadelphia early in the month of May. On the 17th of April, returning from a Southern tour of great extent, I again recognised my old and pleasing acquaintance, by his usual note, near Chester, on the Delaware, where, I have little doubt, a few remain and pass the summer, retiring to the South only as the weather becomes inclement. On the banks of the Patapsco, near Baltimore, their song is still heard to the close of November. According to Audubon, the nest of this bird is usually placed in a hole in some low and decayed tree, or in a fence post; sometimes also in a stable, barn, or out-house. The materials employed are hay, dry grass, and leaves, for the outer part; with a lining of horse-hair, or the capillary dry fibres of the Long-moss (*Tillandsia.* Sometimes the nest is five or six inches deep, but, with the usual precaution of the family, so narrow in the entrance as only to admit of one of the birds at a time. The eggs, five to eight, are oval, and greyish-white, spotted with reddish-brown. Like the common species, an individual (probably one of the young birds) has been observed to roost for a time in an old Wood-Thrush's nest which had been filled with fallen leaves. They are so prolific as to raise two, and sometimes three broods in a season.

THE MOCKING-WREN.

SHORT-BILLED MARSH-WREN.

THIS amusing and not unmusical little species inhabits the lowest marshy meadows, but does not frequent the reed-flats. It never visits cultivated grounds, and is at all times shy, timid, and suspicious. It arrives in Massachusetts about the close of the first week in May, and

retires to the South by the middle of September at farthest, probably by night, as it is never seen in progress, so that its northern residence is only prolonged about four months. In winter they are seen from South Carolina to Texas.

The nest of the Short-Billed Marsh-Wren is made wholly of dry, or partly green sedge, bent usually from the top of the grassy tuft in which the fabric is situated. With much ingenuity and labor these simple materials are loosely entwined together into a spherical form, with a small and rather obscure entrance left in the side; a thin lining is sometimes added to the whole, of the linty fibres of the silk weed, or some other similar material. The eggs, pure white, and destitute of spots, are probably from six to eight. In a nest containing seven eggs, there were three of them larger than the rest, and perfectly fresh, while the four *smaller* were far advanced towards hatching; from this circumstance we may fairly infer that *two* different individuals had laid in the same nest: a circumstance more common among wild birds than is generally imagined. This is also the more remarkable, as the male of this species, like many other Wrens, is much employed in making nests, of which not more than one in three or four are ever occupied by the females!

SHORT-BIBLED MARSH-WREN.

THE TAILOR-BIRD.

This, like the last two, is a very small species, measuring scarcely more than three inches in length.

It is a native of India.

The nest of the Tailor-bird is a very remarkable production. Its exterior is constructed of two leaves; the one generally dead, which the bird fixes, at the end of some branch, to the side of a living one, by sewing both together with little filaments, in the manner of a pouch or purse, and open at the top. In this operation the bill of the bird serves as a needle. Sometimes, instead of a dead leaf and a living one, two living leaves are sowed together; and, thus connected they seem rather the work of human art than of an uninstructed animal. After the operation of sewing is finished, the cavity is

TAILOR BIRD'S NEST.

lined with feathers and soft vegetable down. The nest and birds are together so extremely light, that the leaves of the most exterior and slender twigs of the trees are chosen for the purpose; and, thus situated, the brood is completely secured from the depredations of every invader.

OF THE TITMICE IN GENERAL.

THE bill is straight, strong, hard, sharp-pointed, and a little compressed. The nostrils are round, and covered with bristles. The tongue appears as if cut off at the extremity, and is terminated by three or four bristles. The toes are divided to their origin; and the back toe is very large and strong.

This is a diminutive but sprightly race of birds; possessed both of courage and strength. Their general food consists of seeds, fruit, and insects; and a few of them eat flesh. Some of them will venture to assault birds that are twice or thrice their own bulk; and, in this case, they direct their aim chiefly at the eyes. They often seize upon birds that are weaker than themselves: these they kill, and, having picked a hole in the skull, eat out the brain. They are very prolific, laying eighteen or twenty eggs at a time. Their voice is, in general, unpleasant.

THE PENDULINE TITMOUSE, AND CAPE TITMOUSE.

These birds are about four inches and a half in length. The fore part of the head is whitish, and the hind part and the neck are ash-colored. The upper parts of the plumage are grey; the forehead is black; the throat and the front of the neck are of a very pale ash-color; and the rest of the under parts are yellowish. The quills and tail are brown, edged with white; and the legs are reddish gray.

PENDULINE TITMOUSE.

In the construction of their nests, the Penduline or Bottle Titmice employ chiefly the light down of the willow, the poplar, and the aspen; or of thistles, dandelions, and other flowers. With their bill they entwine these filamentous substances, and form a thick, close web, almost like cloth, this they fortify externally with fibres and small roots, which penetrate into the texture, and in some measure compose the basis of the nest. They line the inside with down, but not woven, in order that their offspring may lie soft. They close the nest above, for the purpose of confining the warmth; and they suspend it with hemp, nettles, &c., from the cleft of a small pliant branch, (over some stream) that it may rock more gently, assisted by the spring of the branch. In this situation the brood are well supplied with insects, which constitute their chief food; and they are also thus protected from their enemies. The nest sometimes

resembles a bag, and sometimes a short purse. The aperture is made in the side, is nearly round, not more than an inch and a half in diameter, and commonly surrounded by a brim more or less protuberant.

These nests are seen in great numbers in the fens of Bologna, and in those of Tuscany, Lithuania, Poland, and Germany. The peasants regard them with superstitious veneration: one of them is usually suspended near the door of each cottage; and the possessors esteem it a defence against thunder, and its little architect is a sacred bird. The penduline Titmice frequent watery places, for the sake of aquatic insects, on which they feed.

The Cape Titmouse, constructs its nest of the down of a species of asclepias. This luxurious nest is made of the texture of flannel, and equals fleecy hosiery in softness. Near the upper end projects a small tube, about an inch in length, with an orifice about three-fourths of an inch in diameter. Immediately under the tube is a small hole in the side, that has no communication with the interior of the nest; in this hole, the male sits at night, and thus both male and female are screened from the weather.

THE CAPE TITMOUSE.

THE BLUE TITMOUSE.

The bill is short and dusky. The crown of the head is of a fine blue color. From the bill to the eyes there is a black line. The forehead and cheeks are white. The back is of a yellowish green; and the lower side of the body yellow. The wings and tail are blue, the former marked transversely with a white bar. The legs are lead-colored.

THE BLUE-TITMOUSE.

This busy little bird is frequently seen in our gardens and orchards where its operations are much dreaded by the over-anxious gardener, who fears, lest, in pursuit of its favorite food, which is often lodged in the tender buds, it may destroy them also, to the injury of his future harvest: not considering that the Titmouse is the means of destroying a much more dangerous enemy (the caterpillar) which it finds there. It has likewise a strong propensity for flesh. This bird is distinguished above all the rest of the Titmice by its rancor against the owl. The female builds her nest in the holes of walls or trees, which it lines well with feathers; she lays from fourteen to twenty white eggs. If her eggs be touched by any person, or one of them be broken, she immediately forsakes her nest and builds again, but otherwise she has but one hatch in the year.

THE GREAT TITMOUSE.

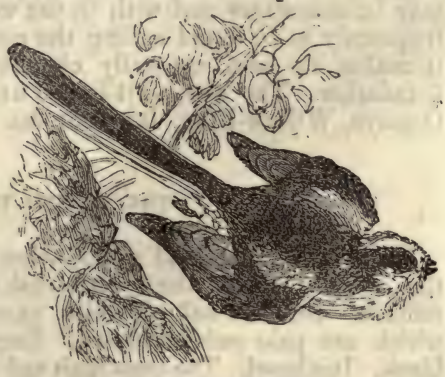
The Great Titmouse is common in this country, frequenting gardens, orchards, copses, &c. During the spring it is very active in the capture of insects, but in autumn and winter it is forced to content itself with grains and seeds of various descriptions. Gilbert White, in his "Selborne," mentions that he has seen the Great Tit "while it hung with its back downwards, to my no small delight and admiration, draw straws lengthwise from the eaves of thatched houses, in order to pull out the flies that were concealed among them, and that in such numbers that they quite defaced the thatch, and gave it a ragged appearance."

THE GREAT TITMOUSE.

The nest of this bird is built in the hole of a wall, or a decayed tree, and in it are placed six or eight eggs, of a white color, spotted with reddish brown. The length of the bird is about six inches.

THE LONG-TAILED TITMOUSE.

The Long-tailed Titmouse is another well-known species of this amusing family. Unlike the other Tits, it does not frequent human habitations during the winter, but may be seen in great numbers twisting and creeping about the branches of hedge-rows and field trees. In summer they are quite as bold as their relations, and especially favor apple-trees, for the sake of the diseased buds, which they pick off and devour, thereby drawing upon themselves the vengeance of the gardener, who prepares his gun, fires at the supposed depredators, and possibly succeeds in killing them: but he has also succeeded in doing more damage to the healthy buds by his spare shot, than a score of Tits would injure during the entire season.



THE LONG-TAILED TITMOUSE.

The beautiful and elaborate nest which this bird constructs is one of its chief peculiarities. It is oval in shape, and entirely closed, except one small hole at the side, just large enough to admit the bird. The exterior of the nest is usually covered with lichens, and is lined with a thick layer of soft feathers. In this warm and elegant habitation are laid from ten to fourteen eggs, which are small and very delicately spotted. The entire length of the bird is about five inches and a half.

THE COAL-TIT.

The Coal-Tit is very similar to the Blue-Tit in form, but smaller, being about four inches in length, and destitute of the lively colors which render that bird so agreeable to the eye. The breast of the Coal-Tit is of a greyish-white, the back yellowish-grey, and the feet and claws of a livid blue; the head and neck are of a deep black, (whence it has been called the Lesser Blackcap,) with a patch of white on each cheek, and another on the nape of the neck. This bird is not very common in England, but in Scotland, where it frequents the forests of pine and fir, it is more abundant, and may be seen throughout the year, except in very severe weather, when it departs southward, or approaches the farm-houses and towns to seek for food.

THE MARSH-TIT.

The Marsh-Tit is very like the preceding in color and form, though larger, but has no white on the nape of the neck. It is very common in the northern parts of England, but is seldom seen in Scotland above Fifeshire, and scarcely ever so far south as London. Although it may be sometimes met with in the woods in dry districts, it is more frequently to be found among the reeds in low marshy tracts, where it makes its nest, generally choosing some decayed willow for a foundation. The Marsh-Tit is also known provincially as the Smaller One-eye, Willow-Biter, Joe Bent, &c.

THE TUFTED TITMOUSE.

This species is six and a half inches long, and nine in the stretch of the wings. Above, dark bluish-ash; the front black tinged with reddish. Beneath sullied white, except the sides under the wings, which are pale reddish-brown. Legs and feet greyish blue. Bill black. Iris hazel. The crest high and pointed, like that of the common Blue Jay. Tail slightly forked. Tips of the wings dusky. Tongue blunt ending in four sharp points. Female very similar to the male.

CHICADEE, OR BLACK-CAPT TITMOUSE.

This familiar, hardy, and restless little bird chiefly inhabits the Northern and Middle States, as well as Canada in which it is even resident in winter around Hudson's Bay, and has been met with at 62° on the North-west coast. In all the Northern and Middle States, during autumn and winter, families of these birds are seen chattering and roving through the woods, busily engaged in gleaning their multifarious food, along with the preceding species, Nuthatches, and Creepers, the whole forming a busy, active, and noisy group, whose manners, food, and habits bring them together in a common pursuit. Their diet varies with the season, for besides insects, their larvæ, and eggs, of which they are more particularly fond, in the month of September they leave the woods and assemble familiarly in our orchards and gardens, and even enter the thronging cities in quest of that support which their native forests now deny them. Large seeds of many kinds, particularly those which are oily, as the Sun-flower, and Pine and Spruce Kernels are now sought after. These seeds, in the usual manner of the genus, are seized in the claws and held against the branch, until picked open by the bill to obtain their contents. Fat of various kinds is also greedily eaten, and they regularly watch the retreat of the hog-killers, in the country, to glean up the fragments of meat which adhere to the places where the carcases have been suspended.

THE CHICADEE.

Its quaint notes and jingling warble are heard even in winter on fine days when the weather relaxes in its severity. It adds by its presence, indomitable action, and chatter, an air of cheerfulness to the silent and dreary winters of the coldest parts of America. Dr. Richardson found it in the fur countries up to the 65th parallel, where it contrives to dwell throughout the whole year.

THE CEDAR BIRD, OR CHERRY BIRD.

CEDAR BIRD.

This common native wanderer, which in the summer extends its migrations to the remotest unpeopled regions of Canada,* is also found throughout the American continent to Mexico, and parties occasionally even roam to the tropical forest of Cayenne. In all this extensive geographical range, where great elevation or latitude tempers the climate so as to be favorable to the production of juicy fruits, the Cedar Bird will probably be found either almost wholly to reside or to pass the season of reproduction. Like its European representative (the Waxen Chatterer,) it is capable of braving a considerable degree of cold, for in Pennsylvania and New Jersey some of these birds are seen throughout the winter, where as well as in the early part of the summer and fall, they are killed and brought to market, generally fat, and much esteemed as food. Silky softness of plumage, gentleness of disposition, innocence of character, extreme sociability, and an innate inextinguishable love of freedom, accompanied by a constant desire of wandering, are characteristic traits in the physical and moral portrait of the second as well as the preceding species of this peculiar and extraordinary genus.

Leaving the northern part of the continent, situated beyond the 40th degree, at the approach of winter, they assemble in companies of twenty to a hundred, and wander through the Southern States and Mexico to the confines of the equator, in all of which countries they are now either common or abundant. As observed by Audubon, their flight is easy, continued, and often performed at a considerable height; and they move in flocks or companies, making several turns before they alight. As the mildness of spring returns, and with it their favorite food, they re-appear in the Northern and Eastern States about the beginning of April, before the ripening of their favorite

* Seen by Mr. Say near Winnipique river in latitude 50, and by Mr. Drummond on the south branch of the Saskatchewan.

fruits, the cherries and mulberries. But at this season, to repay the gardener for the tithe of his crop, their natural due, they fail not to assist in ridding his trees of more deadly enemies which infest them, and the small caterpillars, beetles, and various insects now constitute their only food; and for hours at a time they may be seen feeding on the all-despoiling Canker-worms, which infest our Apple trees and Elms. On these occasions, silent and sedate, after plentifully feeding, they sit dressing their feathers, in near contact on the same branch to the number of five or six; and as the season of selective attachment approaches, they may be observed pluming each other, and caressing with the most gentle fondness; a playfulness, in which, however, they are even surpassed by the contemned Raven, to which social and friendly family our Cedar Bird, different as he looks, has many traits of alliance.

THE BOHEMIAN WAXWING, OR WAXEN CHATTERER.

The Bohemian Waxwing, or Waxen Chatterer, is only occasionally seen in England during severe frosts, at which time flocks of them sometimes arrive. One of these birds was shot at Oxford in the winter of 1846. It is very common in Norway and Russia, and is plentiful in North America. The name of Waxwing is given to it from the singular appendages to the secondary quill feathers, bearing much resemblance to a drop of red sealing-wax pressed on the wing.

THE BOHEMIAN WAXWING.

Berries of all kinds, especially those of the dog-rose and the hawthorn, form the principal food of this bird; but it is related that when in captivity it rejects scarcely any vegetable substance, but loses at the same time all its vivacity and social habits. The note of the Waxwing is not unlike that of the Thrush, but it is very weak and more uncertain than the notes of that beau-

tiful songster. While singing it agitates the crest on its head, but shows scarcely any of that swelling in the throat so preceptible in the Canary and other singing birds.

The length of the bird is rather more than eight inches.

THE JAPANESE CHATTERER.

This is a species found in Japan, with naked nostrils, and without the usual wax-like appendages to the wings which give this genus the name of Waxwing. It is ash-colored, with an ash-colored and red crest.

OF THE SWALLOWS IN GENERAL.

THE bill of the Swallow is short broad at the base, small at the point, and somewhat bent. The nostrils are open. The tongue is short, broad, and cloven. The tail, except in one species is forked; and the wings are long. The legs are short, and (except in four species, in which they are all placed forward) the toes are placed three before and one behind.

THE SWALLOW.

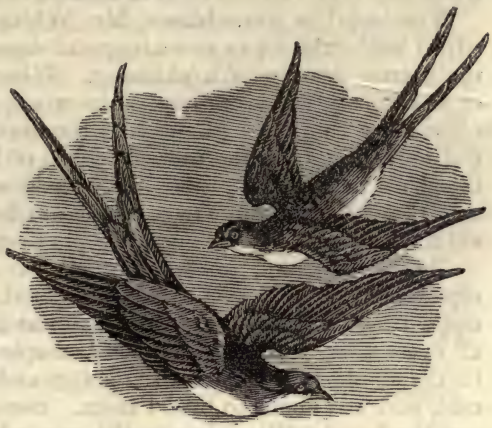
Swallows are easily distinguished from all other birds, not only by their general structure, but by their twittering voice, and their manner of life. They fly with great rapidity, seldom walk, and perform all their functions either on the wing or sitting. By means of their wide mouth they easily catch insects in the air, or on the surface of the water; and on these they subsist.

Naturalists have been much divided in their opinions respecting the migration of the Swallow tribe from this country.

That the actual migration of the Swallow tribe does take place, has been fully proved from a variety of well-attested facts; most of which have been taken from the observation of navigators who were eye-witnesses of their flights, and whose ships have sometimes afforded to them resting-places in their toilsome journeys.

THE CHIMNEY SWALLOW.

During the summer months this Swallow takes up its residence in this country, building its nest generally in the insides of our chimneys, a few feet from the top. This nest is composed of mud mixed with straw and hair, and lined with feathers. It lays four or five eggs, and has two broods in the year.



THE CHIMNEY SWALLOW.

The progressive method by which the young-ones are introduced to their proper habits, is very curious. They first, but not without some difficulty, emerge from the shaft: for a day or two they are fed on the chimney-top; and then are conducted to the dead, leafless bough of some neighboring tree, where, sitting in a row, they are attended by the parents with great assiduity. In a day or two after this, they are strong enough to fly, but they continue still unable to take their own food. They therefore play about near the place, where the dams are watching for flies; and, when a mouthful is collected, at a certain signal, the dam and the nestling advance, rising towards each other, and meeting at an angle; the young-one all the while uttering such a short quick note of gratitude and complacency, that a person must have paid very little regard to the wonders of nature, who has not remarked this scene.

As soon as the dam has disengaged herself from the first brood, she immediately commences her preparations for a second, which is introduced into the world about the middle or latter end of August.

During every part of the summer, the Swallow is a most instructive pattern of unwearied industry and affection: from morning to night, while there is a family to be supported, she spends the whole time in skimming along, and exerting the most sudden turns and quick evolutions: avenues, and long walks under hedges, pasture-fields, and mown meadows where cattle graze, are her delight, especially if there are trees interspersed, because in such spots insects most abound. When a fly is taken, a smart snap from her bill is to be heard, not unlike the noise of the shutting of a watch-case; but the motion of the mandibles is too quick for the eye.

The Swallow is the excubitor to the House-Martins and other little birds, announcing the approach of birds of prey: for as soon as a Hawk or an Owl appears the Swallow calls, with a shrill alarming note, all

his own fellows and the Martins about him; who pursue in a body, and strike their enemy, till they have driven him from the place, darting down upon his back, and rising in a perpendicular line in perfect security. This bird will also sound the alarm, and strike at cats when they climb on the roofs of houses, or otherwise approach the nests.

Wonderful is the address, Mr. White justly observes, which this adroit bird exhibits in ascending and decending with security through the narrow passage of a chimney. When hovering over the mouth of the funnel, the vibrations of its wings acting on the confined air, occasion a rumbling like distant thunder. It is not improbable that the dam submits to the inconvenience of having her nest low down in the shaft, in order to have her broods secure from rapacious birds; and particularly from Owls, which are frequently found to fall down chimneys, probably in their attempts to get at the nestlings.

Professor Kalm, in his Travels in America, says, that a very reputable lady and her children related to him the following story respecting these birds, assuring him at the same time that they were all eye-witnesses to the fact:—"A couple of Swallows built their nest in the stable belonging to the lady; and the female laid eggs in the nest, and was about to brood them. Some days afterwards the people saw the female still sitting on the eggs: but the male flying about the nest, and sometimes settling on a nail, was heard to utter a very plaintive note, which betrayed his uneasiness. On a nearer examination, the female was found dead in the nest; and the people flung her body away. The male then went to sit upon the eggs; but after being about two hours on them, and perhaps finding the business too troublesome, he went out, and returned in the afternoon with another female, which sat upon the nest, and afterwards fed the young-ones, till they were able to provide for themselves."

At Camerton Hall, near Bath, a pair of Swallows built their nest on the upper part of the frame of an old picture over the chimney-piece; entering through a broken pane in the window of the room. They came three years successively; and in all probability would have continued to do so, had not the room been put in repair, which prevented their access to it.

Another pair were known to build for two successive years on the handles of a pair of garden shears, that were stuck up against the boards in an out-house; and therefore must have had their nest spoiled whenever the implement was wanted. And what is still more strange, a bird of the same species built its nest on the wings and body of an Owl, that happened to hang dead and dry from the rafter of a barn and so loose as to be moved by every gust of wind. This Owl, with the nest on its wings, and with eggs in the nest, was taken as a curiosity to the museum of Sir Ashton Lever. That gentleman, struck with the singularity of the sight, furnished the person who brought it with a large shell, desiring him to fix it just where the Owl had hung. The man did so; and in the following year a pair of Swallows, probably the same, built their nest in the shell, and laid eggs.

"By the myriads of insects, which every single brood of Swallows destroy, in the course of a summer, these birds defend us in a great

measure from the personal and domestic annoyance of flies and gnats, and what is of infinitely more consequence, they keep down the numbers of our minute enemies, which, either in the grub or winged state, would otherwise prey on the labors of the husbandman. Since, then, Swallows are guardians of our corn, they should every where be protected by the same popular veneration which in Egypt defends the Ibis, and in Holland the Stork. We more frequently hear of unproductive harvests on the Continent than in England; and it is well known that Swallows are caught and sold as food, in the markets of Spain, France, and Italy. When this practice has been very general and successful, I have little doubt that it has, at times, contributed to a scarcity of corn. In England they are not driven to such resources to furnish their tables. But what apology can be made for those, and many there are, whose education should have taught them more innocent amusements, but who wantonly murder Swallows, under the idle pretence of improving their skill in shooting game? Besides the cruelty of starving whole nests by killing the dam, they who follow this barbarous diversion would do well to reflect, that by every Swallow they kill, they assist the effects of blasts, mildews, and vermin, in causing a scarcity of bread.

All the birds of this tribe have been observed to drink as they fly along, sipping the surface of the water; but the Swallow alone, in general, washes on the wing, by dropping into a pond many times successively. In very hot weather, House-Martins and Bank-Martins, also sometimes dip and wash.

Swallows feed on small Beetles, as well as on Gnats and Flies; and often settle on dug ground or paths, for gravel, which assists in grinding and digesting their food. Horsemen, on wide downs, are often closely attended, for miles together, by a small party of Swallows; which play before and behind them, sweeping around, and collecting all the insects that are roused by the trampling of the horse's feet. When the wind blows hard, the birds, without this expedient, are often forced to alight, in order to pick up their lurking prey.

Mr. White informs us, that for some weeks before the Swallows depart, they (without exceptions) forsake houses and chimneys, and roost in trees; and that they usually withdraw about the beginning of October, though some few stragglers may be seen at times till the first week in November. A few days previously to their departure, they assemble in vast flocks on house-tops, churches, and trees, from which they take their flight.

I shall conclude the account of this bird with an anecdote related by M. de Buffon. This celebrated writer informs us, that a shoemaker in Basle put a collar on a Swallow, containing an inscription to this purport:

"Pretty Swallow, tell me, whither goest thou in winter?"

and in the ensuing spring he received, by the same courier, the following answer:

"To Anthony at Athens:—Why dost thou inquire?"

The most probable conjecture on this story is, that the answer was written by some one who had caught the bird in Switzerland; for both Belon and Aristotle assure us, that though the Swallows live half the year in Greece, yet they always pass the winter in Africa.

The Rev. Revett Shepperd, F. L. S., a few years ago communicated to me the following acount of a Swallow which was domesticated by Miss Boldero of Ixworth, near Bury St. Edmunds: "On the 19th of July, 1806, three young Swallows fell down the chimney of this lady's bed-chamber, and, being fond of birds, she determined, if possible, to rear them. Two of them died in the course of a week, but the third, by feeding it with boiled egg, mixed occasionally with bread, she succeeded in rearing. It grew fast, and continued in excellent health. As flies were its most natural food, she supplied it with these as frequently as possible. It drank plentifully of water, and seemed to derive great pleasure from regularly washing itself. This bird grew so tame that it would come to its mistress whenever she held out her finger for it to alight upon; and thus perched, would catch every fly within its reach. Its eagerness in this act, and its manner of catching these insects, the snap of its beak in so doing, and its general docility, rendered it a very amusing and interesting object. Frequently after dinner, Miss Boldero would bring it upon her finger into the dining-room, a large and lofty apartment. Here it would fly about with great freedom; and, when tired, would come to its mistress to rest itself upon her. It did not appear to notice a small Parrot, which was loose in the same room, and upon the perches of whose stand it was fond of alighting. If, however, the Parrot attempted to attack it, the Swallow always opened its beak in a threatening manner, as if resolved to defend itself from insult.

"When the usual term for the migration of its tribe approached, this bird became uneasy; and, as it was occasionally hung in a cage on the outside of the house, the other Swallows came about it, and appeared to invite it to go with them. The Swallows, so long as any remained, came every day to it; and when they had all disappeared it became tolerably tranquil. Miss Boldero was extremely anxious to preserve it through the winter, and though aware of the difficulty she should have in feeding it through that season, resolved to make the attempt. On the 9th of October, however, after she had fed it as usual, and had left it in apparent health and vigor, she had the mortification, on returning to her chamber, to find it dead. The cause of its death she was unable to ascertain; but she imagined that the bird might have been inadvertently struck by the servant, whilst she was cleaning the room."

THE MARTIN.

About the 16th of April these birds begin to appear, and generally for some time they pay no attention to the business of nidification, but play and sport about, either to recruit themselves from the fatigue of their journey, or else that their blood may recover its true tone

and texture, after having been so long benumbed by the severities of the winter. Towards the middle of May, if the weather be fine, the Martin begins to think of providing a mansion for its family. The crust or shell of its nest seems to be formed of such dirt or loam as is most readily met with; and it is tempered and wrought together with little pieces of broken straws, to render it tough and tenacious.

THE MARTIN.

As this bird often builds against a perpendicular wall, without any projecting ledge under, its utmost efforts are necessary to get the first foundation firmly fixed, so as to carry safely the superstructure. On this occasion the bird not only clings with its claws, but partly supports itself by strongly inclining its tail against the wall, making that a fulcrum; and, thus fixed, it plasters the materials into the face of the brick or stone. But that this work may not, while soft, incline down by its own weight, the provident architect has the prudence and forbearance not to proceed too fast; but, by building only in the morning, and dedicating the rest of the day to food and amusement, she gives it sufficient time to dry and harden. About half an inch seems to be a sufficient layer for a day. Thus, careful workmen, when they build mud-walls, (informed at first, perhaps, by this little bird,) add but a moderate layer at a time, and then desist, lest the work should become top-heavy, and so be ruined by its own weight. By this method, in about ten or twelve days, a hemispherical nest is formed, with a small aperture towards the top; strong, compact, and warm, and perfectly fitted for all the purposes for which it was intended. But nothing is more common than for the House-Sparrow, as soon as the shell is finished, to seize on it, eject the owner, and to line it according to its own peculiar manner. After so much labor is bestowed in erecting a mansion, as Nature seldom works in vain, Martins will breed for several years successively in the same nest, where it happens to be well sheltered and secured from the injuries of the weather. The shell or crust of the nest is a sort of rustic work, full of knobs and protuberances on the outside: nor is the inside smoothed with any great exactness; but it is rendered soft and warm, and fit for incubation, by a lining of small straws, grasses, and feathers, and sometimes by a bed of moss interwoven with wool.

In this nest are produced four or five young ones; which, when arrived at full growth, become impatient of confinement, and sit all day with their heads out at the orifice, where the dams, by clinging to the nest, supply them with food from morning to night. After this they are fed on wing by the parents; but this feat is performed by so quick and almost imperceptible a flight, that a person must attend very exactly to the motions of the birds, before he is able to perceive it.

As soon as the young-ones are able to provide for themselves, the dams repair their nest for a second brood. The first flight then associate in vast flocks; and may be seen on sunny mornings and evenings, clustering and hovering around towers and steeples, and on the roofs of churches and houses. These congregations usually begin to take place about the first week in August. From observing the birds approaching and playing about the eaves of buildings, many persons have been led to suppose that more than two old birds attend on each nest.

The Martins are often very capricious in fixing on a nesting-place, beginning many edifices and leaving them unfinished; but (as we have before observed) when a nest has once been completed in a sheltered situation, it is made to serve for several seasons. In forming their nests, these industrious artificers are at their labor, in the long days, before four o'clock in the morning: in fixing their materials they plaster them on with their chins, moving the head with a quick vibratory motion.

Sometimes, in very hot weather, they dip and wash themselves as they fly, but not so frequently as the Swallows. They are the least agile of all the British hirundines; their wings and tails are short, and therefore they are not capable of those surprising turns, and quick and glancing evolutions, that are so observable in the Chimney-Swallows.

Their motion is placid and easy: generally in the middle region of the air; for they seldom mount to any great height, and never sweep long together over the surface of the ground or water. They do not wander far in quest of food; but are fond of sheltered places near some lake, or under some hanging wood, especially in windy weather.

During the residence of a Mr. Simpson, at Welton in North America, he one morning heard a noise from a couple of Martins that were flying from tree to tree near his dwelling. They made several attempts to get into a box or cage which was fixed against the house, and which they had before occupied; but they always appeared to fly from it again with the utmost dread, at the same time repeating those loud cries which first drew his attention. Curiosity led this gentleman to watch their motions. After some time, a small Wren came from the box, and perched on a tree near it; when her shrill notes seemed to amaze her antagonists. Having remained a short time, she flew away. The Martins took this opportunity of returning to the cage; but their stay was short. Their diminutive adversary entered and made them retire with the greatest precipitation. They continued manœuvring in this way, during the whole day, but on the following morning, when the Wren quitted the cage, the Martins immediately returned, took possession of their mansion, broke up their own nest, went to work afresh with extreme industry and ingenuity, and soon barricaded their doors. The Wren returned, but could not now re-enter. She made attempts to storm the nest, but did not succeed. The Martins abstaining from food nearly two days, persevered during the whole of that time in defend-

ing the entrance; and the Wren, finding she could not force the works, raised the siege, quitted her intentions, and left the Martins in quiet possession of their dwelling.

THE SAND-MARTIN.

In the banks of rivers, and in the perpendicular sides of sand-pits, these birds dig round and regular holes, about two feet in depth, which run horizontally, and in a somewhat serpentine direction. At the further end of these burrows, the birds construct their rude nest of grass and feathers. "Though one would at first be disinclined to believe (says Mr. White) that this weak bird, with her soft tender bill and claws, should ever be able to bore the stubborn sand-bank without entirely disabling herself; yet with these feeble instruments have I seen a pair of them make great dispatch; and could remark how much they had scooped in a day, by the fresh sand which ran down the bank, and which was of a different color from what lay loose and had been bleached in the sun. In what space of time the little artists are able to mine and finish these cavities, I have never been able to discover; but it would be a matter worthy of observation, where it falls in the way of any naturalist to make such remarks. This I have often taken notice of, that several holes of different depths are left unfinished at the end of the summer. To imagine that these beginnings were intentionally made, in order to be in the greater forwardness for the ensuing spring, is allowing perhaps too much foresight to a simple bird. May not the cause of their being left unfinished, arise from the birds meeting, in those places, with strata too harsh, hard, and solid, for their purpose; which they relinquish, and go to a fresh spot, where they can work more freely? Or may they not in other places fall in with a soil as much too loose and mouldering, liable to founder, and threatening to overwhelm them and their labors? One thing is remarkable; that, after some years, the old holes are forsaken, and new ones are bored; perhaps because the former habitations were become foul and fetid from long use, or because they so abounded with fleas as to become untenable." Sand Martins are so strangely annoyed with fleas, that these vermin have been sometimes seen swarming at the mouths of their holes, like bees on the stools of their hives.

THE SAND MARTIN.

The Sand Martin appears in this country about the same time as the Swallow, and lays from four to six white and semi-transparent eggs. These birds seem not to be of very sociable disposition: with us they never congregate in the autumn. They have a peculiar manner of flying: they flirt about with odd jerks and vacillations, not unlike the motions of a Butterfly.

THE ESCULENT SWALLOW.

The Esculent Swallow is somewhat smaller than the Wren. Its bill is thick. The upper parts of the body are brown, and the under parts whitish. The tail is forked; and each feather is tipped with white. The legs are brown.

The nest of this bird is exceedingly curious, and is composed of such materials, that it is not only edible, but is accounted by the epicures of Asia, among their greatest dainties. It generally weighs about half an ounce; and is, in shape, like a half-lemon, or, as some say, like a saucer with one side flatted, which adheres to the rock. The texture somewhat resembles isinglass, or fine gum-dragon: and the several layers of the component matter are very apparent; it being fabricated from repeated parcels of a soft, slimy substance, in the same manner as the Martins form their nests of mud. Authors differ much as to the materials of which this nest is composed: some suppose it to consist of sea-worms, of the *Mollusca* class; others from the sea-qualm, (a kind of Cuttle-fish,) or a glutinous sea-plant, called *agal-agal*. It has also been supposed that the Swallows rob other birds of their eggs, and, after breaking their shells, apply the white of them in the composition of these structures.

The best sort of nests, which are perfectly free from dirt are dissolved in broth, in order to thicken it; and are said to give it an exquisite flavor. Or they are soaked in water, to soften them; then pulled to pieces; and, after being mixed with *ginseng*, are put into the body of a fowl. The whole is afterwards stewed in a pot, with a sufficient quantity of water, and left on the coals all night. On the following morning it is in a state to be eaten.

These nests are found in vast numbers in certain caverns of islands in the Soolo Archipelago. The best kind sell in China at from one thousand to fifteen hundred dollars the *picle*; (about twenty-five pounds;) the black and dirty ones for only twenty dollars. It is said that the Dutch alone export from Batavia one thousand *picles* of these nests every year: they are brought from the islands of Cochin-China and those lying east of them.

The following is the account given of the nests of the Esculent Swallow by Sir George Staunton: "In the Cass (a small island near Sumatra) were found two caverns, running horizontally into the side of the rock; and in these were a number of those bird-nests so much prized by the Chinese epicures. They seem to be composed of fine filaments, cemented together by a transparent viscous matter, not unlike what is left by the foam of the sea upon stones alternately covered by the tide, or those gelatinous animal substances that are found floating on every coast. The nests adhere to each other, and to the sides of the cavern; mostly in rows, without any break or interruption. The birds that build these nests are small gray Swallows, with bellies of a dirty white color. They were flying about in considerable numbers; but were so small, and their flight was so quick, that they escaped the

shot fired at them. The same sort of nests are said also to be found in deep caverns at the foot of the highest mountains in the middle of Java, and at a great distance from the sea. The Esculent Swallows feed on insects which they find hovering over stagnated pools between the mountains, and for the catching of which their wide-opening beaks are particularly adapted. They prepare their nests from the best remnants of their food. Their greatest enemy is the Kite, which often intercepts them in their passage to and from the caverns. The nests are placed in horizontal rows, at different depths, from fifty to five hundred feet. The color and value of the nests depend on the quantity and quality of the insects caught; and, perhaps, also on the situation in which they are built. Their value is chiefly ascertained by the uniform fineness and delicacy of their texture; those that are white and transparent being most esteemed, and often fetching in China, their weight in silver.

"These nests are a considerable object of traffic among the Javanese; many of whom are employed in it from their infancy. The birds, after having spent nearly two months in preparing their nests, lay each two eggs, which are hatched in about fifteen days. When the young birds become fledged, is the proper time to take the nests; and this is regularly done three times a year, and is effected by means of ladders of bamboo and reeds, by which the people descend into the caverns: but when these are very deep, rope-ladders are preferred. This operation is attended with much danger. The inhabitants of the mountains, who obtain a livelihood by collecting the nests, always begin by sacrificing a buffalo. They also pronounce certain prayers, anoint themselves with sweet-scented oil, and smoke the entrance of the cavern with gum-benjamin. Near some of the caverns a tutelar goddess is worshipped, whose priest burns incense, and lays his protecting hands on every person preparing to descend. A flambeau is, at the same time, carefully prepared, with a gum which exudes from a tree growing in the vicinity, and which is not easily extinguished by fixed air or subterraneous vapors."

THE BLACK MARTIN, OR SWIFT.

The legs of the Swift are so short, that the actions of walking and rising from the ground seem very difficult to it. Providence, however, has made the bird ample compensation, by furnishing it with means, in a peculiarly great extent of wing, for an easy and long-continued flight. It passes more of its time on wing than any other Swallow, and its flight is more rapid. It breeds under the eaves of houses, in steeples, and other lofty buildings; and makes its nest of grass and feathers.

The feet of this bird are of a peculiar structure, all the toes standing forward. The least toes consist of only one bone; the others of two each; in which they differ from the toes of all other birds. This, however, is a construction nicely adapted to the purposes for which the feet of these birds are employed.

The Swift visits England the latest, and leaves the earliest, of any bird of its tribe: it does not often arrive before the begining of May, and seldom remains later than the middle of August.

It is the most active of all birds; being on wing, in the height of summer, at least sixteen hours in the day; withdrawing to rest, in the longest days, about a quarter before nine in the evening, some time after all the other day-birds are gone. Just before they retire, large groups of Swifts assemble high in the air, screaming, and shooting about with wonderful rapidity. They are chiefly alert in sultry, lowering weather; when they express great alacrity, and seem to call forth all their powers.

In hot mornings, the Swifts collect together, in little parties, and dash around the steeples and churches, squeaking at the same time in a very clamorous manner. These are supposed to be the males serenading the sitting hens; as they seldom make this noise till they come close to the walls or eaves, and those within always utter in return a faint note of complacency. When the hen has been occupied all the day in sitting, she rushes forth, just before it is dark, to relieve her weary limbs. She snatches a scanty meal for a few minutes, and then returns to her task of incubation.

Swifts, when shot while they have young-ones, are found to have a little cluster of insects in their mouths, which they pouch and hold under their tongue. In general, they fly and feed higher in the air than any other species. They also range to vast distances; for motion is but a slight labor to them, endowed as they are with such wonderful powers of wing. Sometimes, however, in the summer they may be observed, for many successive hours, hawking very low, over pools and streams, in search of the Cadew-flies, May-flies, and Dragon flies, which frequent the banks and surface of waters, and which afford them a plentiful nourishment. Sometimes they pursue and strike at birds of prey when they are sailing about in the air; but they do not express so much vehemence and fury on these occasions as the Swallows.

Swifts breed but once in the summer and produce no more than two young-ones at a time.

The main body of these birds retire from this country before the middle of August, generally by the 10th, (which is but a short time after the flight of their young-ones,) and not a single straggler is to be seen on the 20th. This early retreat is totally unaccountable, as that time is often the most delightful in the year. But, what is yet more extraordinary, they begin to retire still earlier in the most southerly parts of Andalusia; where they cannot be influenced by any defect of heat, or even (as one would suppose) of food. This is one of those incidents in natural history, which not only baffle our researches, but also elude our conjectures.

The voice of the Swift is a harsh scream; yet there are few ears to which it is not pleasing, from an agreeable association of ideas, since it is never heard but in the most lovely weather of summer. These birds never, unless by accident, settle on the ground, from the difficulty they have in walking, or rather (as it may be called) in crawling; but they have a strong grasp with their feet, by which they readily

cling to walls and other places that they frequent. Their bodies being flat, they can enter a very narrow crevice; and where they cannot pass on their bellies, they will turn up edgewise to push themselves through.

THE TROGON.

The magnificent family of the Trogons stands pre-eminent in beauty and brilliancy of plumage, the usual tint being a metallic golden green, boldly contrasted with scarlet, black and brown. The toes are placed two behind and two before, like those of the Woodpeckers.

RESPLENDENT TROGONS.

The Resplendent Trogon is the most gorgeous of all this gorgeous family. Its long and gracefully curved tail, nearly three feet long; the whole of the upper surface, and the throat, are a glowing green; the breast and under parts are bright crimson; the middle feathers of the tail black, and the outer feathers white. This splendid bird is an inhabitant of Mexico, and was used by the Mexican nobles as an ornament to their head-dress.

From the feathers of these and other Trogons the mosaic pictures of the Mexicans were made. One of these, most delicately and beautifully executed, containing many figures, is now in the Ashmolean Museum at Oxford, and is there said to be made of Humming-birds' feathers. The subject is "Christ fainting under the cross." The whole picture is about the size of the palm of the hand, and the figures are barely half an inch in height.

This is a very difficult bird to stuff, on account of the delicate texture of the skin, which is so fragile, that it tears almost as easily as wet blotting paper.

THE HOOPOE.

One of the most elegant birds that visit England is unfortunately a very rare guest, and seldom if ever, breeds there. Its beautiful crest can be raised or depressed at pleasure, but is seldom displayed unless the bird is excited from some cause. Its food consists of insects, which

it first batters and moulds into an oblong mass, and then swallows with a peculiar jerk of the head. In Yarrell's British Birds, there is a very interesting account of a tame Hoopoe in the possession of Mr. Bartlett.

In France Hoopoes are very common, and may be seen examining old and rotten stumps for the insects that invariably congregate in such places. There they may be seen in flocks, but they never seem to go over to England in greater numbers than one pair at a time. M. Bechstein gives a curious account of the attitude assumed by the Hoopoe on perceiving a large bird in the air. "As soon as they perceived a Raven or even a Pigeon, they were on their bellies in the twinkling of an eye, their wings stretched out by the side of the head so that the large quill feathers touched the head, leaning on the back with the bill pointing upwards. In this curious posture they might be taken for an old rag!"

HOOPOE

These birds of which he is speaking are two young Hoopoes whom he had taken from the nest and was rearing. They lived for some time, but both died of civilization. The female had a habit of dragging her food about the floor, so that it became covered with rubbish.

HOOPOE.

This formed a hard mass nearly the size of an ordinary nut in the bird's stomach, something like the balls of hair found in the stomach of a cow, and soon killed the poor Hoopoe. The male bird lived through the winter, but becoming attached to the warmth of the stove, its beak became so unnaturally dry, that the two mandibles separated from each other and curved outwards, having an interval of nearly an inch between their tips. The bird of course soon died of absolute starvation.

The Hoopoe lays from four to seven grey eggs in the hollow of a tree. Its length is one foot.

LYRE BIRDS.—MALE AND FEMALE.—Page 639.

PARADISE GRAKLE.

THIS is a native of New Guinea, where it perches on the tallest trees, feeding upon fruits and berries. In its manners it resembles the Crow. It is sixteen inches long, with a large strong beak. The plumage is iridescent green, violet, gold and silver, on a steel blue ground.

THE LYRE BIRD.

This bird, called by naturalists the *Minura Superbas*, is found in New South Wales, where it lives in the thickets on the coasts, and on the mountains in the interior. It is shy and difficult of access. Its chief beauty is in the plumage of its tail, which is very elegant, assuming the form of an ancient Lyre. It has an agreeable song of its own, and imitates those of other birds, and even the barking of a dog.

THE LYRE BIRD.

RED BILLED PIQUE-BŒUF.

This is an African bird. It is ash-colored, glazed with blue above and rust color below, with a red bill. Like our common Crow Blackbird, it lives on the insects which infest the hides of quadrupeds and on the larvæ hatched under the skin of the larger ruminating animals, as the Ox, Buffalo, and the heavy Antelopes. His strong claws and bill enable him to reach these vermin to the great relief of his patients.

OF THE PIGEON TRIBE IN GENERAL.

These birds have a weak slender bill, straight at the base; with a soft protuberance, in which the nostrils are situated. The legs are short, and in most of the species red; and the toes are divided to the origin.

The Pigeons constitute a tribe that forms a connecting link between the passerine birds and the poultry. They are much dispersed over the world, some of the species being found even in the arctic regions.

PIGEONS.

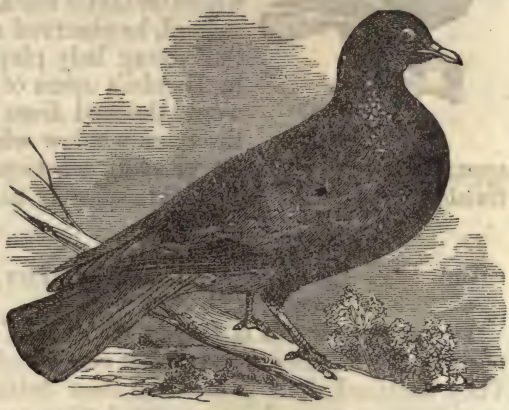
Their principal food is grain: they drink much: and not at intervals like other birds, but by a continued draught, like quadrupeds. During the breeding-time they associate in pairs, and pay court to each other with their bills. The female lays two eggs, and the young-ones are, for the most part, a male and a female. They usually breed more than once in the year; and the parent birds divide the labor of incubation by sitting alternately on the eggs.

Both the male and female assist in feeding their offspring. This, in most of the species with which we are acquainted, is done by means of a substance secreted in the crop, which in appearance is not unlike curd, and is analogous to milk in quadrupeds. During incubation, the coat of the crop is gradually enlarged and thickened, like what happens to the udders of female quadrupeds during the time of uterine gestation. On comparing the state of the crop when the bird is not sitting, with its appearance on these ocasions, the difference is found to be very remarkable. In the first case it is thin and membranous; but when the young-ones are about to be hatched, it becomes thicker, and takes a glandular appearance, having its internal surface very irregular. Whatever may be the consistence of this substance when just secreted, it probably very soon coagulates into a granulated white curd; and in this form it is always found in the crop. If an old Pigeon be killed just when the young-ones are hatching, the crop will be found as above described, having in its cavity pieces of white curd mixed with the common food of the bird, such as barley, peas, or grain. The young Pigeons are fed for a little while with this substance only:

about the third day some of the common food is to be found along with it. As the Pigeons grow older, the proportion of common food is increased; so that by the time they are seven, eight, or nine days old, the secretion of the curd ceases in the old ones, and of course no more is found in the crop of the young. It is a curious fact, that the parent Pigeon has, at first, power to throw up this curd without any mixture of common food; although, afterwards, both are thrown up, in the proportion required for the young-ones.

THE WILD PIGEON, OR STOCK-DOVE.

THIS bird is of a bluish ash-color: the breast is dashed with a fine changeable green and purple; and the sides of the neck are of a shining copper-color. Its wings are marked with two black-bars; one on the coverts, and the other on the quill feathers. The back is white, and the tail barred near the end with black. The usual weight is about fourteen ounces.



STOCK-DOVE.

Multitudes of Wild Pigeons visit this country in the winter, from their more northerly summer retreats. They appear about November, and again retire (except a few that breed with us) in the spring. While the beech woods were suffered to cover large tracts of ground, these birds used to haunt them in myriads, frequently extending above a mile in length, as they went out in a morning to feed. They are, however, still found in considerable quantity, forming their nests in holes of rock, and old towers, and in the hollows of trees; but never, like the Ring-dove, on the boughs.

WILD PIGEON.

In a state of domestication, these Pigeons are known to breed eight or nine times in the

year; and though only two eggs are laid at a time, their increase is so rapid and prodigious, that, at the expiration of four years, the produce, and descendants, of a single pair, may amount to the immense number of nearly fifteen thousand.

The usual way to entice Pigeons to remain at a required spot, is to place what is called a *salt-cat* near them. This is composed of loam, old rubbish, and salt, and will so effectually answer the purpose as to decoy even those which belong to other places.

We have a singular anecdote of the effect of music on a Pigeon, related by John Lockman, in some reflections concerning operas, prefixed to his musical drama of Rosalinda. This person being at the house of Mr. Lee, a gentleman who lived in Cheshire, and whose daughter was a fine performer on the harpsichord, he observed a Pigeon, which, whenever the young lady played the song of "Speri si" in Handel's opera of Admetus, (and this only,) would descend from an adjacent Dovehouse to the room-window where she sat, and listen to it apparently with the most pleasing emotions; and when the song was finished, it always returned immediately to the Dove-house.

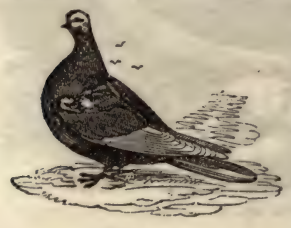
WILD PIGEON.

CARRIER PIGEON.

There are upwards of twenty varieties of the Domestic Pigeon; and of these the *Carriers* are the most celebrated. They obtained their name from their being sometimes employed to convey letters and small packets from one place to another.

CARRIER PIGEON.

It is through attachment to their native place, and particulaaly to the spot where they have brought up their young-ones, that they are thus rendered useful to mankind. The bird is conveyed from its home to the place whence the information is intended to be sent; the letter is tied under its wing, and it is let loose. From the instant of its liberation its flight is directed through the clouds, at an amazing height, to its home. By an instinct altogether inconceivable, it darts onward, in a straight line, to the very spot whence it was taken; but how it can direct its flight so exactly, will probably for ever remain unknown to us.



BALD PATE.

The rapidity of their flight is very wonderful. Lithgow assures us that one of them will carry a letter from Babylon to Aleppo (which, to a man, is usually thirty days' journey) in forty-eight hours. To measure their speed with some degree of exactness, a gentleman some years ago, on a

trifling wager, sent a Carrier Pigeon from London, by the coach, to a friend at Bury St. Edmund's; and along with it a note, desiring that the Pigeon, two days after its arrival there, might be thrown up precisely when the town clock struck nine in the morning. This was accordingly done; and the Pigeon arrived in London, and flew into the Bull-inn, in Bishopsgate-street, at half-past eleven o'clock of the same morning, having flown seventy-two miles in two hours and a half.

POUTER.

The Carrier Pigeon is easily distinguished from the other varieties, by a broad circle of naked white skin round the eyes, and by its dark blue or blackish color.

THE RING-DOVE.

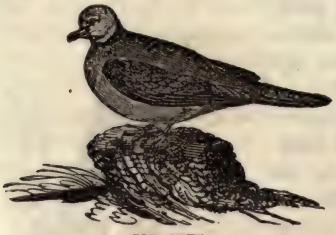
The Ring-dove is the largest Pigeon which is found in England, and may at once be distinguished from all others by its size. Its weight is about twenty ounces; its length eighteen inches, and its breadth about thirty. The head, back, and coverts of the wings are of a bluish ash-color. The lower side of the neck and breast is of a purplish red, dashed with ash-color. On the hind part of the neck there is a semi-circular line of white; above and beneath that the feathers are glossy, and of changeable colors when opposed to the light. The belly is of a dirty white. The greater quill-feathers are dusky; the rest ash-colored. Underneath the bastard-wing there is a white stroke pointing downward.

RING-DOVE.

These Pigeons build their nests on the branches of trees, and generally prefer those of the pine. The nest is large and open, formed principally of dried sticks; and the eggs, which may frequently be seen through the bottom of the nest, are larger than those of the Domestic Pigeon.

The food of this, as well as of the other species, is principally grain; but a neighbor of the Rev. Mr. White, of Selborne, shot a Ring-dove, as it was going to roost; and when his wife had picked

and drawn it, she found its craw stuffed with a collection of the tender tops of turnips. Hence we may see that granivorous birds, when their usual kinds of subsistence fail, can feed on the leaves of vegetables. There is indeed reason to suppose that they would not long be healthy without these substances; for Turkeys, though corn-fed, delight in a great variety of plants, such as cabbage, lettuce, and endive; poultry pick much grass; and Geese live for months together on commons, by grazing only.



RING-DOVE.

Attempts have frequently been made to domesticate these birds, by hatching their eggs in dove-houses, under the common Pigeon; but as soon as the young-ones were able to fly, they always escaped to their proper haunts. Mr. Montagu was at considerable pains in experiments of this nature; and though he so far tamed them within doors as to have them become exceedingly troublesome, yet he never could produce a breed, either by themselves or with the tame Pigeon. Two that were brought up with a male Pigeon, were rendered so tame that they would eat out of the hand; but as they showed no signs of breeding in the spring, they were suffered to fly away, by the window of the room in which they were confined being left open. It was supposed that, the Pigeon might induce them to return to their usual place of abode, either for food or to roost; but from that moment they assumed their natural habits, and nothing more was seen of them, although the Pigeon remained. This gentleman bred up a curious assemblage of birds, which lived together in perfect amity: it consisted of a common Pigeon, a Ring-dove, a White-owl, and a Sparrow-hawk; and the Ring-dove was master of the whole.

THE CROWNED PIGEON.

This bird is about the size of a common Turkey. Its head is adorned with a most superb circular crest of feathers, standing erect and composed of loose, unconnected webs, of a fine bluish ash-color. The eyes are lodged in a shuttle-shaped band of black. The lesser coverts of the wings, and the upper part of the back, are of a dark reddish purple: the first greater coverts are white, edged with red; and all the rest of the plumage is of the same color as the crest.

CROWNED PIGEON.

The wings of the Crowned Pigeon are armed each with a horny excrescence, with which they are able to strike a severe blow. These birds are easily rendered tame; and, in the East Indies, they are kept

in court-yards, with poultry. They have frequently been brought alive into Europe, where they are justly considered among the greatest ornaments of the menagerie: and one instance has occurred of a female laying eggs, but these were unproductive. In a wild state they breed in the highest trees.

These birds have all the habits of the common Pigeons; billing, inflating their breast, and cooing: the noise of their cooing is, however, so loud, as, at times, to resemble rather a bellowing. It is said that M. Bougainville's sailors were greatly alarmed at hearing this noise for the first time, in the wild and unfrequented spots of some of the islands on which they landed: they supposed it to proceed from the savage cries of hostile and concealed natives.

THE GREAT CROWNED PIGEON.

The Crowned Pigeons are found in New Guinea, Pulo, and a few of the adjacent islands.

THE PASSENGER PIGEON.

This species is about the size of the common Pigeon. Its bill is black. Round the eyes there is a crimson mark; and the head, throat, and upper parts of the body, are ash-colored. The sides of the neck are of a grossy, variable purple. The fore part of the neck and breast are vinaceous; and the under parts are of a similar color, but paler. The tail is tolerably long. The legs are red, and the claws black.

Passenger Pigeons visit in enormous flocks, the different parts of North America. In the southern provinces their numbers depend greatly on the mildness or severity of the season: for in very mild weather few or none of them are to be seen. Actuated by necessity, they change their situation in search of acorns, mast, and berries which

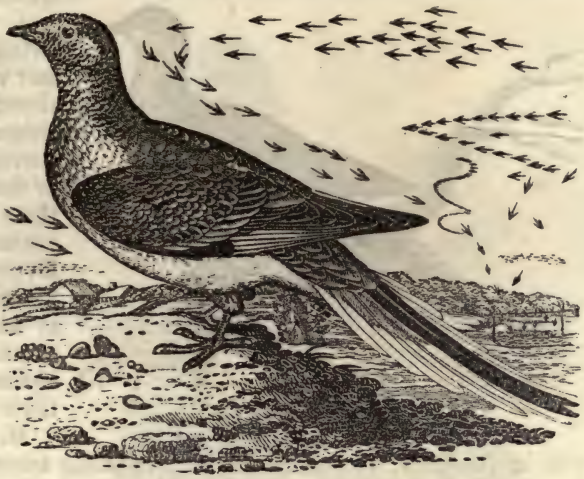
the warmer provinces yield in vast abundance. When they alight, the ground is quickly cleared of all esculent fruits; to the great injury of the Hog, and other mast-eating animals. After having devoured every thing that has fallen on the surface, they form themselves into a great perpendicular column, and fly around the boughs of trees, from top to bottom, beating down the acorns with their wings; and they then, in succession, alight on the ground, and again begin to eat.

THE PASSENGER PIGEON.

"I think," says Mr. Blackburne, in a letter to Mr. Pennant, "that these are as remarkable birds as any in America. They are in vast numbers in all parts; and have, at times, been of great service to our garrisons, in supplying them with fresh meat, especially at the outposts. A friend told me, that in the year in which Quebec was taken, the whole army was supplied with this subsistence. The way was this. Every man took his club, (for they were forbidden to use their firelocks,) and the Pigeons flew in such numbers, that each person could kill as many as he wanted. They in general begin to fly soon after day-break, and continue till nine or ten o'clock; and again about three in the afternoon and continue till five or six; but what is very remarkable, their course is always westerly. The times of flying here are in the spring, about the latter end of February or the beginning of March, and they continue their flight every day for eight or ten days; and again in the fall, when they appear at the latter end of July or the beginning of August. The inhabitants catch vast numbers of them in clap-nets. I have seen them brought to the market at New York by sacksful. People in general are very fond of them, and I have heard many say that they think them as good as our common blue Pigeon: but I cannot agree in this opinion: the flesh tastes most like that of our Queest, or wild Pigeon, but it is better. Sir William Johnston told me, that at one shot, with a blunderbuss, he killed *above a hundred and twenty*. I must remark a singular fact: that notwithstanding the whole people of a town go out *a pigeoning*, as they call it, they do not on some days, kill a single hen bird; and on the very next day not a single cock; (and yet both sexes always fly westerly;) and when this is the case, the people are always assured that there will be a great quantity of them that season."

These Pigeons were so numerous when La Hontan was in Canada,

that, he says, the bishop had been compelled more than once formally to *exorcise* them, on account of the damage they committed. Many of the trees are said to have had more Pigeons on them than leaves; and for eighteen or twenty days, it was supposed that a sufficient number might have been killed to supply food for a thousand men.



PASSENGER PIGEONS.

Mr. Weld who some years ago travelled through the States of North America, informs us that a gentleman of the town of Niagara assured him, that once when he was embarking on board a vessel from Toronto a flight of Pigeons was observed coming from that quarter; that, as he sailed over the lake Ontario to Toronto, forty miles distant from Niagara, Pigeons were seen flying over-head, the whole way, in a direction contrary to that in which the vessel proceeded; and that, on his arriving at the place of his destination, the birds were still observed coming from the North, in as large bodies as had been noticed at any time during the voyage. Supposing, therefore, that the Pigeons moved no faster than the vessel, the flight, according to this gentleman's account, must have exceeded at least eighty miles.

During their migrations, these Pigeons are very fat. It is a singular fact, that Mr. St. John found in the craw of one of them some undigested rice, when the nearest rice-fields were at least five hundred and sixty miles from his habitation. He naturally concluded that either they must fly with almost the celerity of the wind, or that digestion must be in a great measure suspended during their flight.

GROUP OF WILD PIGEONS.

The Indians often watch the roosting-places of these birds; and, knocking them on the head in the night, bring them away by thousands. They preserve the oil, or fat, which they use instead of butter.

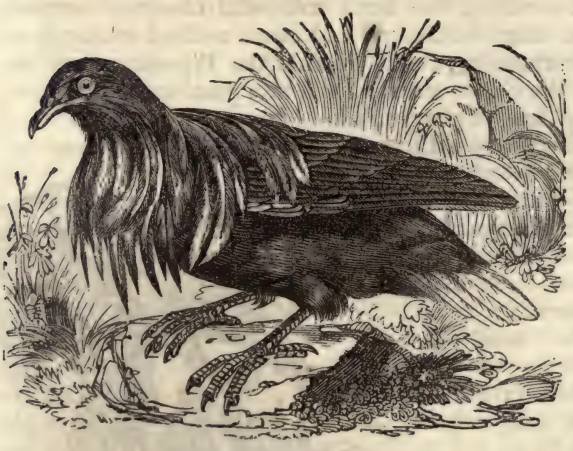
By the Europeans they are generally caught in nets extended on the ground; to which they are allured by tame Pigeons of their own species, that are blinded, and fastened to a long string. The short flights and repeated calls of the shackled birds, never fail either to excite their curiosity, or bring some of them down to attempt their relief; when they are immediately enclosed. Every farmer has a tamed Pigeon in a cage at his door all the year round, to be ready against the season of their flight.

PASSENGER PIGEON.

M. du Pratz, when he was in America, placed under the roosting trees of these Pigeons, vessels filled with flaming sulphur, the fumes of which brought them to the ground in immense numbers.

THE NICOBAR PIGEON.

This splendid bird, is a native of Java, Nicobar, Sumatra, and many of the Moluccas. It is, as far as we have been enabled to determine, terrestrial in its habits. Its plumage is exceedingly refulgent; the head is of a dull slate color, with a tinge of purple: long flowing pointed feathers ornament the neck, like the hackles of the domestic cock, of a rich green with coppery reflections; the coverts of the wings are also pointed. The whole of the upper portion of the body is bronze with steel-blue reflections on glossy green; the under portion is similar, only less brilliant. The tail is pure white.



THE NICOBAR PIGEON

THE CHESTNUT-SHOULDERED PIGEON.

This magnificent bird is a native of New Zealand, and is very abundant in the woods near the Bay of Islands. Their flesh is excellent. All the upper parts and throat are of a changable hue, in which are mingled rosy-copper reflections running into brilliant iridescent tints; the quills are of a more sombre tone. The tail above is brown slightly tinged with greenish, below it is brown; breast and under parts white; bill and tarsi carmine; a bright red skin surrounds the eye. Length about nineteen inches.

THE CHESTNUT-SHOULDERED PIGEON.

THE TALPICOTI.

Brazil, Paraguay, and other portions of South America are the native countries of this little Pigeon. It is seldom if ever, seen in large flocks, but often in families of five or six, frequents the borders of woods, and sometimes ventures near farm yards. When captured it soon becomes reconciled, and breeds freely.

THE TALPICOTI.

THE BROWN-BACKED PERISTERA.

THE BROWN-BACKED PERISTERA.

This species is a native of Southern Africa, where it is said to frequent woods; but little appears to be known respecting it. The plumage above is brown, slightly tinged with grey on the neck; three or four of the greater wing-coverts have large spots of shining green; forehead, a streak over each eye, and all the under parts white; middle tail-feathers brown, the two exterior on each side grey, with a broad black bar; under surface of wings and sides pale orange-brown; under tail-coverts brown; bill and legs grey, the latter tinged with red; length nine inches.

THE OCEANIC FRUIT PIGEON.

THE OCEANIC FRUIT PIGEON.

The Oceanic Fruit Pigeon is fourteen inches in length, including the tail, which measures five; the bill, an inch long, is black, strong, and surmounted at its base by a rounded very black caruncle; the feet are very strong and of a bright orange color; the tarsi are feathered nearly down to the toes, which have a well developed border; the wings are pointed and only one inch shorter than the tail, which is almost rectilinear. The lower part of the belly, the vent, the thighs, and the lower tail-coverts, are a deep ferruginous red: the tail-feathers on the under side are a bright reddish-green.

THE MANASOPE PIGEON.

A most elegant bird, is found in the deep forests of New Guinea, and in the neighborhood of the harbor of Doréry. Its head, rump, upper part of the body, wings, and tail, of an agreeable grass green; a large hood of a beautiful indigo-blue covers the occiput; elongated blue spots occupy the centre of the subular feathers, which are bordered with a straight yellow line. The throat to half-way down the neck is ash grey; the breast is greyish-green.

THE MANASOPE.

THE WATTLED GROUND PIGEON.

The wattled ground Pigeon is a native of South Africa. Its nest is composed of twigs and the dried stems of grasses, placed in some slight hollow of the ground, and there the female lays six or eight reddish-white eggs, which are incubated by both the parents. The young, like those of the Partridge, almost immediately follow the parent, who broods over them, and gathers them beneath her wings. They walk and run with great rapidity; and roost on bushes or the lower branches of trees.

THE WATTLED GROUND PIGEON.

THE PHASIANELLA.

THE PHASIANELLA.

This beautiful species is found in Australia, Java, and the Phillipine and Molucca islands. It is an inhabitant of the woods, and its food is said to consist of a kind of Pimento and of other aromatic berries, swallowed entire. The flesh is dark, but its flavor is stated to be excellent. Its length is from fourteen to sixteen inches, the tail being seven and rather more.

Their habits and mode of life are also nearly allied to the other arboreal species, being the constant inhabitants of the woods, and subsisting upon the fruits and berries of various trees and shrubs. M. Temminck, in his description of these species, says that it possesses a structure and form precisely similar to that of the *Columba migratoria* of North America. To this we cannot subscribe, seeing that its essential characters, as above described, are different, and that the only point of resemblance consists in the length of the tail. Indeed, so far removed do we think it from the American group, that we cannot consider it as its analogue in the Asiatic regions where it resides.

The prevaling color of these Pigeons is bluish-gray, of various intensities and shades, frequently embellished upon the neck with feathers having a metallic lustre and pecular form, and which exhibit various tints of color according to the light in which they are viewed. They are naturally birds of a wild and timid disposition (though one species has been partly reclaimed), and usually live congregated in extensive flocks, except during the season of reproduction, when they pair. Most of the species seek their food upon the ground.

They build in trees or holes of rocks, making a shallow nest of small twigs loosely put together. Their eggs are never more than two in number, their color a pure white; they are incubated alternately by both sexes, and are hatched after being sat upon from eighteen to twenty-one days. The young, upon exclusion, are thinly covered with down, which is rapidly succeeded by the proper feathers.

THE BRONZE-WINGED PIGEON.

This beautiful species is a native of Australia, and is common near Sidney from September till February. It is usually seen in pairs; and their voice is loud and sonorous. The nest is placed either in the hole of a mouldering tree or on a stump. The eggs are two and white. The wing-coverts are remarkable for a large ovate spot of metallic lustre, changing in different lights.

THE BRONZE-WINGED PIGEON.

It belongs to the species *Phaps*, which is characterized as follows by Mr. Selby. Bill moderately long, rather slender; upper mandible gently deflected at the tip, and with the indication of a notch or emargination. Wings of mean length; second and third feathers longest, and nearly equal. Tail slightly rounded. Legs, tarsi as long as the middle toe, the front covered with a double row of scales, sides and back reticulated with small hexagonal scales. Hind toe short; inner toe exceeding the outer in length. Claws blunt, slightly arched. Type, *Columba Chalcoptera*, Latham: *Columba elegans*, Temm.; and *Columba picata*, Wagler, belong to this group.

THE ROCK-DOVE.

This species is spread over a great portion of Europe, Asia, and Northern Africa, abounding in the rocky islands of the Mediterranean and in the Orkneys. The Rock-dove is more slender than the Stock-dove, and is astonishingly rapid in flight. It may at once be distinguished from the latter by the white color of the lower part of the back, and the two distinct bands of leaden black across the wings. It is to the Rock-dove a species almost universally spread in its wild state throughout the Old World, that the domestic Pigeon and its varieties must be referred. All these varieties breed with each other, and with the wild Rock-dove; and without due care, all soon degenerate, as it is termed, and acquire the original form and coloring.

THE ROCK-DOVE.

"Under this species," writes Mr. Selby, "we include not only the common Pigeon, or inhabitant of the dove-cot, but all those numerous varieties, or, as they are frequently termed, races of domesticated Pigeons, so highly prized, and fostered with such care and attention by the amateur breeder or Pigeon fancier; for, however diversified their forms, color or peculiarity of habit may be, we consider them all as having originated from a few accidental varieties of the common Pigeon, and not from any cross of that bird with other species, no signs or marks whatever of such being apparent in any of the numerous varieties known to us. In fact, the greater part of them owe their existence to the interference and the art of man; for by separting from the parent stock such accidental varieties as have occasionally occurred, by subjecting these to captivity and domestication, and by assorting them and pairing them together, as fancy or caprice sugested, he has at intervals generated all the various races and peculiar varieties which, it is well known, when once produced, may be perpetuated for an indefinite perod, by being kept separate from, and unmixed with others; or what by those interested in such pursuits is usually termed 'breeding in and in.'"

THE DOUBLE-CRESTED PIGEON.

New Holland and Java are the native localities of this species. The head is ornamented with a frontal crest composed of long recurved lax feathers, advancing even on the bill, and of a bluish grey color tinged with rufous; behind this, on the back of the head, is a second crest of rich rufous and composed of long decumbent feathers with open barbules and bounded by a black streak running back from each eye; bill rich orange; sides and front of the neck, together with the breast, pale gray, the base of the feathers being black, at their end they assume a trifid form; back scapulars and wing-coverts deep bluish grey; quills and secondaries bluish black; under plumage grey; tail square, black at the base, and a narrow bar being of a pale grey with a reddish tinge; legs crimson.

THE DOUBLE-CRESTED PIGEON.

The double crest gives the head of the Pigeon a character unlike any of its congeners, and more resembling that of some of the crested *Phasianidæ* or *Cracidæ*, with which an analogical relation is thus sustained. In other respects its characters agree with those of *Columba spadicea*, the proportion of the wings and the form of the feet being nearly the same.

Although an approach from the fruit-eating Pigeons, or Carpophagæ, to the true Pigeons, is made by *Columba spadicea* and *dilopha*, still the form of their feet, is evidently better adapted for arboreal than terrene habits, and their general aspect, are such as to show that some intermediate form is wanting to bring them into that immediate connexion with the group represented by the European ring Pigeon, which M. Temminck seems to intimate.

THE AROMATIC VINAGO.

This bird is a native of India, Java, and the adjacent islands. It is of a mild and timorous disposition, and is generally seen in flocks or societies, except during the period of reproduction, when they pair, and retire to the recesses of the forest. The nest is simple and composed of a few twigs loosely put together, and the eggs are two. The base or softer part of the bill is a blackish grey, the tip yellowish white, strong, much hooked, and bulging on the side. The forehead is of a bright silken green, the crown greenish grey, the chin and throat gamboge-yellow, the remainder of the neck, the breast, belly, lower back and rump, yellowish green. The tail has the two middle feathers wholly green, and slightly exceeding the rest in length. In its habits it is arboreal.

THE AROMATIC VINAGO.

Mr. Selby gives the following note which accompanied the skins of *Vinago militaris*, and *Vinago aromatica*. "Green Pigeon.—This beautiful bird has brilliant red eyes. Its feet are something like the Parrot's, and it climbs in the same way as that bird. Iit is very difficult to find; for although a flock is marked into a tree, yet its color is so similar to the leaf of the banyan (on the small red fig of which it feeds), that if a bird does not move you may look for many minutes before you can see one, although there may be fifty in the tree."

GALLINACEOUS BIRDS.

In the birds of this order, the bill is convex, the upper mandible lying in an arch over the lower one; and the nostrils are arched over with a cartilaginous membrane. The feet are formed for running, without a back toe; and the toes are rough underneath.

OF THE TURKEY TRIBE IN GENERAL.

Belonging to the present tribe, two species only have hitherto been discovered; one in America, and the other in the more retired parts of India. In each of them the bill is convex, short, and strong. The head and neck, or throat, and in some of the species all three, are covered with naked carunculated or warty flesh, the skin of which is flaccid and membranaceous. The tail is broad, and the birds have the power of expanding it.

THE AMERICAN, OR COMMON TURKEY.

The hunting of these birds forms one of the principal diversions of the natives of Canada. When they have discovered the retreat of a flock of Turkeys, which in general is near fields of nettles, or where there is plenty of any kind of grain, they send a well-trained dog into the midst of the flock. The birds no sooner perceive their enemy, then they run off at full speed, and with such swiftness, that they leave the dog far behind. He, however, follows; and at last forces them to take shelter in a tree; where they sit, spent and fatigued, till the hunters come up, and with long poles knock them down one after another.

Turkeys were first introduced from North America into England in

the reign of Henry the Eighth. According to Tusser's "Five Hundred Pointes of good Husbandrie," they began about the year 1585 to form an article in our rural Christmas feasts:

> Beefe, mutton, and pork, shred pies of the best,
> Pig, veale, goose, and capon, and *turkie* well drest
> Cheese, apples, and nuts, jolly carols to heare,
> As then in the countrie is counted good cheare."

These birds, among themselves, are extremely furious; and yet against other animals they are generally weak and cowardly. The domestic cock often makes them keep at a distance; and they seldom venture to attack him but with united force, when the cock is rather oppressed by their weight than annoyed by their weapons. There have, however, occurred instances in which the Turkey-cock has not been found wanting in prowess:—A gentleman of New York received from a distance a Turkey-cock and hen, and a pair of Bantams, which he put into his yard with other poultry. Some time afterwards, as he was feeding them from the barn-door, a large hawk suddenly turned the corner of the barn, and made a pitch at the Bantam-hen. She immediately gave the alarm, by a noise which is natural to poultry on such occasions. On hearing this, the Turkey-cock, which was at a little distance, and no doubt understood the Hawk's intentions, and the imminent danger of his old acquaintance, flew at the tyrant with such violence, and gave him so severe a stroke with his spurs when about to seize his prey, as to knock him from the hen to a considerable distance; and the timely aid of this faithful auxiliary saved the bantam from being devoured.

COMMON TURKEY.

DOMESTIC TURKEY-COCK.

To this I can add another instance (though very different in its nature) of the gallantry of the Turkey-cock. In the month of May, 1798, a female Turkey, belonging to a gentleman in Sweden, was sitting upon eggs: and as the cock, in her absence, began to appear uneasy and dejected, he was put into the place with her. He immediately sat down by her side; and it was soon found that he had taken some eggs from under her, and had

himself sat upon them. The eggs were put back, but he soon afterwards took them again. This induced the owner, by way of experiment, to have a nest made, and as many eggs put into it as it was thought the cock could conveniently cover. The bird seemed highly pleased with this mark of confidence; he sat with great patience on the eggs, and was so attentive to the care of hatching them, as scarcely to afford himself time to take the food necessary for his support. At the usual period, twenty-eight young-ones were produced: and the cock, which was in some measure the parent of this numerous offspring, appeared perplexed on seeing so many little creatures picking around him, and requiring his care. He was not, however, trusted with the rearing of the brood, lest he should neglect them; and they were reared by other means.

WILD TURKEY.

The disposition of the female Turkey is in general much more mild and gentle than that of the male. When leading out her young family to collect their food, though so large and apparently so powerful a bird she gives them very little protection against the attacks of any rapacious animal that comes in her way. She rather warns them to shift for themselves, than prepares to defend them. "I have heard a Turkey-hen, when at the head of her brood, (says the Abbé de la Pluche,) send forth the most piteous scream, without my being able to perceive the cause: her young-ones, however, immediately when the warning was given, skulked under the bushes, grass, or whatever else seemed to offer shelter or protection. They even stretched themselves at full length on the ground, and continued lying motionless as if dead. In the meantime the mother, with her eyes directed upwards, continued her cries and screaming as before. On looking up, in the direction in which she seemed to gaze, I discovered a black spot just

under the clouds, but was unable at first to determine what it was; however, it soon appeared to be a bird of prey, though at first at too great a distance to be distinguished. I have seen one of these animals continue in this agitated state, and her whole brood pinned down as it were to the ground, for four hours together; whilst their formidable foe has taken his circuits, has mounted, and hovered directly over their heads: at last, upon his disappearing, the parent changed her note, and sent forth another cry, which in an instant gave life to the whole trembling tribe, and they all flocked around her with expressions of pleasure, as if conscious of their happy escape from danger."

Josselyn says that he has eaten part of a Turkey-cock which, after it was plucked and the entrails were taken out, weighed thirty pounds. Lawson, whose authority is unquestionable, saw half a Turkey serve eight hungry men for two meals, and says that he had seen others which he believed would each weigh forty pounds. Some writers assert that instances have occurred of Turkeys weighing sixty pounds.

The females lay their eggs in spring, generally in some retired and obscure place; for the cock, enraged at the loss of his mate while she is employed in hatching, is apt otherwise to break them. They sit on their eggs with so much perseverance, that if not taken away, they will sometimes perish with hunger rather than leave the nest. They are exceedingly affectionate to their offspring.

In a wild state Turkeys are gregarious; and associate in flocks, consisting sometimes of more than five hundred. They frequent the great swamps of America to roost; but they leave these at sun-rise, to repair to the dry woods in search of acorns and berries. They perch on trees, and gain the height they wish by rising from bough to bough; and they generally mount to the summits of even the loftiest trees, so as to be beyond musket-shot. They run very swiftly, but they fly awkardly; and about the month of March they become so fat that they cannot fly beyond three or four hundred yards, and are then easily run down by a horseman.

It is seldom indeed that wild Turkeys are now seen in the inhabited parts of America; and they are only found in great numbers, in the distant and most unfrequented parts. If the eggs of wild Turkeys be hatched under the tame birds, the offspring are said still to retain a certain degree of wildness, and to perch separate from the others; yet they will mix and breed together in the season.

The Indians make an elegant clothing of the feathers of Turkeys. Thy twist the inner webs into a strong double string with hemp, or with the inner bark of the mulberry-tree, and work it like matting. This appears very rich and glossy, and as fine as silk shag. The natives of Louisiana make fans of the tail; and of four tails joined together, the French used formerly to construct a parasol.

OF THE PEACOCK TRIBE IN GENERAL.

The bill is strong and convex. The head is covered with feathers which bend backward. The nostrils are large. The feathers of the train are long, broad, expansile, and covered with eye-like spots.

There are only four known species of Peacocks. These are birds, for the most part, of large size. They feed on insects, fruit, and grain. One of them (the common kind) is an inhabitant of Asia and Africa, another of China, the third of Thibet, and the fourth of Japan.

THE CRESTED, OR COMMON PEACOCK.

If, says M. de Buffon, empire were claimed by beauty, and not by power, the Peacock would, without contradiction, be the king of birds. For elegance of form, and brilliancy of plumage, it is exceeded by none of the feathered race. On the Peacock it is that nature appears to have bestowed her treasures with the greatest profusion. Its large size, imposing manner, firm tread, and noble figure: the rich crest upon its head, adorned with brilliant colors: its matchless plumage, appearing to combine every thing that can delight the eye —all contend to place it high in our esteem. These beautiful plumes, however, are shed every year. At this period the bird seems humiliated; and searches the shades, in order to conceal himself from our eyes until a new spring restores to him his usual attire.

COMMON PEACOCK.

The brilliant train of the Peacock is not its tail: the long feathers that form it do not grow from the rump, but upon the back. A range of short, brown, stiff feathers, fixed upon the rump, is the real tail, and serves as a support to the train. When the train is elevated, nothing

appears of the bird in front, except its head and neck; but this would not be the case, were those long feathers fixed only on the rump. By a strong muscular vibration, these birds can make the shafts of their long feathers clatter together like the swords of a sword-dancer.

Peacocks are found wild in Asia and Africa: but the largest and finest of these birds are seen in the neighborhood of the Ganges, and in the fervid plains of India. They are mentioned in the Sacred Writings, where they are enumerated as constituting part of the cargoes of the fleet which imported the treasures of the East to the court of Solomon.

These birds were highly esteemed by the Romans. Pliny states, that the first Roman who ordered Peacocks to be served up at his table, was Hortensius, in a grand entertainment which he gave when he was consecrated high priest. Marcus Aufidius Lurco was the first who attempted to fatten these birds in a manner which was peculiar to himself, and by which he is said to have derived an annual income of more than sixty thousand sesterces.

The females lay only a few eggs at a time, and these at a distance of usually three or four days from each other. When they are at liberty and act from natural instinct, they always deposit their eggs in some sequestered or secret place. These are white and spotted, like the eggs of the Turkey. The incubation occupies from twenty-seven to thirty days, according to the temperature of the climate and of the season.

As Peacocks, in this country, are not able to fly well, they climb from branch to branch, to the tops of the highest trees. From these and from the roofs of houses, it is, that they usually make their harsh and very peculiar cry. In this cry, one note is deep and the other sharp, the latter exactly an octave above the former; and both have somewhat of the piercing sound of a trumpet.

The females of this species, like those of the Pheasant, have some times been known to assume the plumes of the male. Lady Tynte had a favorite pied Peahen, which eight times produced chicks Having moulted when about eleven years old, the lady and her family were astonished to see her display the feathers that are peculiar to the other sex, and appear like a pied Peacock. In the following year she moulted again, and produced similar feathers. In the third year she did the same, and then had also spurs resembling those of the cock. The hen never bred after this change of her plumage

THE BRUSH TURKEY.

The Megapodidæ, deriving their name from the enormous size of their feet, are inhabitants of Australia and the Papuan Islands. In the habits of these birds there is a peculiarity hardly less singular than surprising. Instead of hatching their eggs by the warmth of the body, as most other birds do, not excepting the Ostrich, the Megapodes bury their eggs in a decaying heap of grass and leaves, trusting to the heat furnished by the fermentation to hatch the eggs.

Brush Turkey is principally found in the thick brushwood of New

South Wales. Mr. Gould, who first brought it before the public, gives this curious account of their nests:—"The mode in which the materials composing these mounds are accumulated is equally singular, the bird never using its bill, but always grasping a quantity in its foot, throwing it backwards to one common centre, and thus clearing the surface of the ground for a considerable distance so completely that scarcely a leaf or a blade of grass is left. The heap being accumulated, and time allowed for a sufficient heat to be engendered, the eggs are deposited, not side by side as is ordinarily the case, but planted at the distance of nine or twelve inches from each other, and buried at nearly an arm's depth, perfectly upright, with the large end upwards. They are covered up as they are laid, and allowed to remain until hatched. I am credibly informed, both by natives and settlers living near their haunts, that it is not an unusual event to obtain nearly a bushel of eggs at one time from a single heap; and as they are delicious eating they are eagerly sought after.

BRUSH TURKEY.

When the Brush Turkey is disturbed, it either runs through the tangled underwood with singular rapidity, or springs upon a low branch of some tree, and reaches the summit by a succession of leaps from branch to branch. This latter peculiarity renders it an easy prey to the sportsman.

THE MOUND-MAKING MEGAPODE,

Inhabits the dense thickets bordering on the sea-shore, and is never found far inland. Like the Brush Turkey, it deposits many eggs in one mound, but instead of placing them at intervals in the mound, the bird makes deep holes, from five to six feet, at the bottom of which the eggs are deposited. The natives obtain the eggs by scratching up the earth with their fingers, until they have traced the hole to the bottom; a very laborious task, as the holes seldom run straight, and turn off at right angles to avoid a stone or root. The mounds are enormously large. Mr. Gilbert was told by the residents that they were the tombs of the aborgines, nor was it until after some time that their real nature was made known. The height of one mound was fifteen feet, and its circumference at the base sixty feet.

OF THE PHEASANT TRIBE IN GENERAL.

THE characters of the present tribe are a short, convex, and strong bill; the head more or less covered with carunculated bare flesh on the sides, which in some species is continued upwards to the crown, and beneath so as to hang pendent under each jaw; and the legs in most of the species are furnished with spurs.

The females of this tribe produce many young-ones at a brood: these they take care of for some time, leading them abroad, and pointing out food for them. The nests of the whole tribe are formed on the ground.

THE COMMON PHEASANT.

This beautiful bird is very common in almost all the southern parts of the Old Continent, whence it was originally imported into our country.

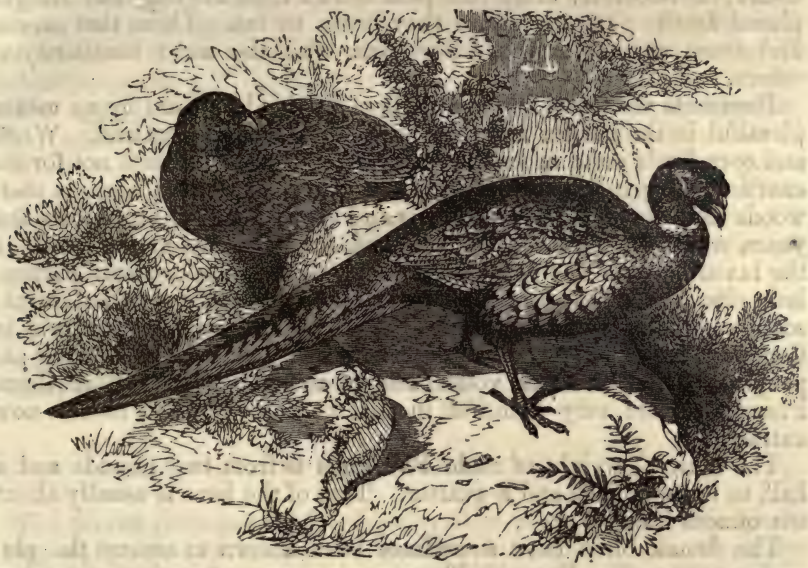
Pheasants are much attached to the shelter of thickets and woods, where the grass is long; but, like Partridges, they likewise breed in clover-fields. They form their nests on the ground: and the females lay from twelve to fifteen eggs, which are smaller than those of the domestic hen. In the mowing of clover near woods that are frequented by Pheasants, the destruction of their eggs is sometimes very great. In some places, therefore, game-keepers have directions to hunt the birds from these fields as soon as they begin to lay, until their haunt is broken, and they retire into the corn. Poultry Hens are often kept ready for sitting on any eggs that may be exposed by the scythe; and, with care, great numbers are thus rescued from destruction. The nest of the Pheasant is usually composed of a few dry vegetables put carelessly together, and the young-ones follow their mother, like chickens, as soon as they break the shell. The parents and their brood, if undisturbed, remain in the stubbles and hedgerows, for some time after the corn is ripe. If disturbed, they seek the woods, and only issue thence in the mornings and evenings to feed among the stubbles. These birds are fond of corn; but can procure a subsistence without it; since they often feed on the wild berries of the woods, and on acorns.

In confinement the female Pheasant neither lays so many eggs, nor hatches nor rears her brood with as much care and vigilance, as in the fields out of the immediate observation of man. Indeed, in the business both of incubation and rearing the young-ones, the domestic Hen is generally made a substitute for the Hen Pheasant.

The wings of these birds are short, and ill-adapted for considerable flights. On this account, the Pheasants on the island called *Isola Madre* in the *Lago Maggoire* at Turin, as they cannot fly over the lake, are imprisoned. When they attempt to cross, they are almost always drowned.

The Pheasant is, in some respects, a stupid bird. On being roused it will often perch on a neighboring tree, where its attention will be so fixed on the dogs, that the sportsman can without difficulty approach within gun-shot. It has been asserted that the Pheasant imagines itself out of danger whenever its head only is concealed. Sportsmen, however, who recount the stratagems that they have known old Cock Pheasants to adopt, in thick and extensive coverts, before they could be compelled to take wing, convince us that this bird is by no means deficient in the contrivances that are necessary for its own preservation.

At the commencement of cold weather, Pheasants fly after sun-set into the branches of the oak-trees, and there roost during the night.



GROUP OF PHEASANTS.

This they do more frequently as the winter advances, and the trees lose their foliage. The male birds, at these times, make a noise, which they repeat three or four times successively, called by sportsmen *cocketing*. The hens, on flying up, utter one *shrill whistle*, and then are silent. Poachers avail themselves of these notes, to discover the roosting places; and there (in woods that are not well watched) they shoot them with the greatest certainty. Where woods are watched, the poacher, by means of phosphorus, lights several brimstone matches; and he moment the sulphurous fumes reach the birds, they drop to the ground. Or, he fastens a snare of wire to the end of a long pole; and, by means of this, drags them, one by one, from the trees. He sometimes catches these birds in nooses made of wire, or twisted horsehair, or even with a briar set in the form of a noose, at the verge of a wood. The birds entangle themselves in these, as

they run into the adjacent fields to feed. Foxes destroy great numbers of Pheasants.

The males begin to crow during the first week in March; and the noise can be heard at a considerable distance. They occasionally come into farm-yards in the vicinity of coverts where they abound, and sometimes produce a cross breed with the common fowls.

It has been contended that Pheasants are so shy, as not to be tamed without great difficulty. Where, however, their natural fear of man has been counteracted, from their having been bred under his protection; and where he has almost constantly appeared before their eyes in their coverts, they will come to feed immediately on hearing the keeper's whistle. They will follow the keeper in flocks; and scarcely allow the peas to run from his bag into troughs placed for the purpose, before they begin to eat. Those that cannot find room at one trough, follow him with the same familiarity to others.

Pheasants are found in most parts of England, but are by no means plentiful in the north; and they are seldom seen in Scotland. Wood and corn lands seem necessary to their existence. Were it not for the exertions of gentlemen of property, in preserving these birds in their woods from the attacks of poachers and sportsmen, the breed, in a few years, would be extinct. The demand for Pheasants at the tables of the luxurious, and the easy mark they offer to the sportsman, particularly since the art of *shooting flying* has been generally practised, would soon complete their destruction. Mr. Stackhouse, of Pendarvis in Cornwall, informed me, that forty years ago, he recollects hearing old people say, that in their youth, and in the generation before them, Pheasants were very plentiful in that county; but the race is now extinct.

The general weight of male Pheasants is from two pounds and a half, to three pounds and a quarter. That of the hens is usually about ten ounces less.

The female birds have sometimes been known to assume the plumage of the male. But with Pheasants in a state of confinement, those that take this new plumage always become barren, and are spurned and buffeted by the rest. From what took place in a hen Pheasant, belonging to a lady, a friend of Sir Joseph Banks, it would seem probable that this change arises from some alteration of temperament at a late period of the animal's life This lady had paid particular attention to the breeding of Pheasants. One of the hens, after having produced several broods, moulted, and the succeeding feathers were exactly like those of a cock. This animal, however never afterward had young-ones.

THE HORNED PHEASANT.

This beautiful specimen of the genus Pheasant is a native of China and Thibet. It is as rare as it is beautiful. But one has as yet reached Europe. In size it is between a Turkey and common fowl.

THE CHINESE PHEASANT.

This bird is distinguished by having a yellow crest, the breast scarlet, the back and rump yellow, the upper tail-coverts long, narrow, and red, the wing-coverts varied with bay and brown, the quill-feathers brown, with yellowish spots, and the secondary quill-feathers blue.

The singular beauty of the Chinese Pheasants has long rendered these birds objects of admiration. Though inhabitants of the warmer districts of China, they can, without difficulty, be kept in aviaries in our own country. The females are smaller than the males, have a shorter tail, and plumage of much less brilliant color. In many instances, however, when old, they have been known, like the Pea-hen, and the female European Pheasant, to assume a plumage similar to that of the male.

The eggs of the Chinese Pheasant resemble those of the Guinea-fowl; and are in proportion smaller than those of the poultry-hens.

Sir Hans Sloane kept a male Chinese Pheasant nearly fifteen years, during the whole of which time it continued in perfect health. From this bird he obtained a mixed breed with the common Pheasant. Of this breed the produce had a plumage much less beautiful than that of the Chinese species.

Chinese Pheasants suffer more inconvenience in European climates, from the humidity and changeable state of the atmosphere, than from the cold weather of winter. They require more care than common Pheasants, but are fed and attended in the same manner

THE ARGUS PHEASANT.

The Argus Pheasant is of a clayey-yellow color, spotted with black. The face is red, and behind the head is a blue crest. The wings are grey, and have a great number of eye-like spots. The two middle feathers of the tail are very long, and are spotted through their whole length.

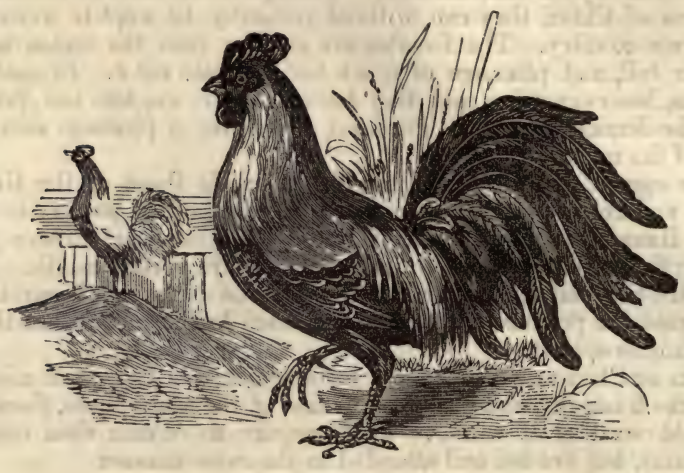
The *Argus Pheasant*, has been so called from the number of eye-like spots with which its wing-feathers are covered. These birds are found in many of the northern parts of China, and in several of the interior districts of India and Sumatra. They are nearly as large as Peacocks, and rank among the most beautiful of the feathered creation. They are extremely wild, and very difficult to be kept alive for any length of time after they have been taken from the woods. In a strong light they appear dazzled, and when exposed to such they seem melancholy and inanimate; but in the dark they recover all their animation.

These birds have a cry not much unlike that of a Peacock. Their flesh is palatable, and in flavor like that of the common Pheasant. The wing and tail-feathers are in considerable request as ornaments in female head-dresses.

THE DOMESTIC COCK.

This bird differs very much from the wild descendants of its primitive stock; which are said to inhabit the forests of India, and most of the islands of the Indian seas.

His beautiful plumage and undaunted spirit, as well as his great utility, have rendered him a favorite in all countries where he has



DOMESTIC COCK.

been introduced. His courage is scarcely to be subdued by the most powerful assailants: and though he should die in the effort, he will defend his females against enemies that are infinitely stronger than himself.

"I have just witnessed (says M. de Buffon) a curious scene. A Sparrow-hawk alighted in a populous court-yard: a young cock of this year's hatching instantly darted at him, and threw him on his back. In this situation the Hawk defended himself with his talons and his bill, intimidating the hens and Turkeys, which screamed tumultuously round him. After he had a little recovered himself, he rose and was taking wing, when the cock rushed upon him a second time, over turned him, and held him down so long, that he was caught."

The cock is very attentive to his females, hardly ever losing sight of them. He leads, defends, and cherishes them: collects them together when they straggle; and seems to eat unwillingly till he sees them feeding around him. Whenever any strange cock appears within his domain, he immediately attacks the intruder, and if possible, drives him away.

His jealousy does not, however, seem to be altogether confined to his rivals. It has sometimes been observed to extend even to his beloved female; and he appears capable of being actuated by revenge,

founded on suspicions of her conjugal infidelity. Dr. Percival, in his Dissertations, relates an incident that happened at the seat of a gentle man near Berwick, which justifies this remark. "My mowers," says this gentleman, "cut a Partridge on her nest; and immediately brought the eggs (fourteen in number) to the house. I ordered them to be put under a very large and beautiful hen, and her own to be taken away. They were hatched in two days, and the hen brought them up perfectly well till they were five or six weeks old. During that time they were constantly kept in an out-house, without being seen by any of the other poultry. The door happening to be left open, the cock got in. My housekeeper, hearing the hen in distress, ran to her assistance; but did not arrive in time to save her life. The cock, observing her with the brood of Partridges, had fallen upon her with the utmost fury, and killed her. The housekeeper found him tearing the hen with both his beak and spurs; although she was then fluttering in the last agony, and incapable of any resistance. This hen had formerly been the cock's greatest favorite."

The patience and perseverance of the hen in hatching, are truly extraordinary. She covers her eggs with her wings, fostering them with a genial warmth; and often turns them, and changes their situations, that all their parts may receive an equal degree of heat. She seems to perceive the importance of her employment; and is so intent on her occupation, as to neglect in some measure even the necessary supplies of food and drink. In about three weeks the young brood burst from their confinement; and the hen, from the most cowardly and voracious, becomes (in the protection of her young) the most daring and abstemious of all birds. If she cast her eyes on a grain of corn, a crumb of bread, or any aliment, though ever so inconsiderable, that is capable of division, she will not touch the least portion of it; but gives her numerous train immediate notice of her success, by a peculiar call, which they all understand. They flock in an instant round her, and the whole treasure is appropriated to them. Though by nature timid, and apt to fly from the smallest assailant; yet when marching at the head of her brood she is a heroine, she is

HEN AND CHICKENS.

fearless of danger, and will fly in the face of the fiercest animal that offers to annoy her.

As the chickens reared by the hen bear no proportion to the number of eggs she produces, many artificial schemes of rearing them have been attempted. The most successful, though by no means the most humane, is said to be where a capon is made to supply the place of a hen. He is rendered very tame: the feathers are plucked from his breast, and the bare parts are rubbed with nettles. The chickens are then put to him; and, by their running under his breast with their soft and downy bodies, his pain is so much allayed, and he feels so much comfort to his featherless body, that he soon adopts them, feeding them like a hen, and assiduously performing all the functions of the tenderest parent.

Chickens have long been hatched in Egypt by means of *artificial heat*. This is now chiefly practised by the inhabitants of a village called Berme, and by those who live at a little distance from it. Towards the beginning of autumn, these persons spread themselves over the country; and each of them is ready to undertake the management of an oven. The ovens are of different sizes, each capable of containing from forty to eighty thousand eggs; and the number of ovens in different parts is about three hundred and eighty-six. They are usually kept in exercise for about six months; and, as each brood occupies twenty-one days in hatching, it is easy, in every oven to produce eight different broods of chickens in the year.

The ovens where these eggs are placed, are of the most simple construction; consisting only of low arched apartments of clay. Two rows of shelves are formed, and the eggs are placed on these in such a manner as not to touch each other. They are slightly moved five or six times every twenty-four hours. All possible care is taken to diffuse the heat equally throughout; and there is but one aperture, just large enough to admit a man stooping. During the first eight days the heat is rendered great; but during the last eight it is gradually diminished, till at length, when the young brood are ready to come forth, it is reduced almost to the state of the natural atmosphere. By the end of the first eight days it is known which of the eggs will be productive. Every person who undertakes the care of an oven, is under the obligation only of delivering to his employer two-thirds of as many chickens as there have been eggs given to him; and he is a considerable gainer by this bargain, as it almost always happens that many more than that proportion of the eggs produce chickens.

This useful and advantageous mode of hatching eggs, was introduced into France by M. de Reaumur; who, by a number of experiments, reduced the art to certain principles. He found that the degree of heat necessary for producing all kinds of domestic fowls was the same, the only difference consisting in the time during which it ought to be communicated to the eggs: it will bring the Canary-bird to perfection in eleven or twelve days, while the turkey-poult requires twenty or twenty-eight. M. de Reaumur found that stoves heated by pipes from a baker's or the furnaces of glasshouses, succeeded better than those made hot by layers of dung, the mode preferred in

Egypt. These should have their heat kept as nearly equal as possible; and the eggs should be frequently removed from the sides into the middle, in order that each may receive an equal portion. After the eggs are hatched, the offspring should be put into a kind of low boxes without bottoms. and lined with fur; the warmth of which supplies the place of a hen, and in which the chickens can at any time take shelter. These should be kept in a warm room till the chickens acquire some strength; the chickens then may, with safety, be exposed to the open air, in a court-yard.

As to the mode in which the young brood are fed: a whole day generally elapses after they are hatched, before they take any food at all; a few crumbs of bread are given for the subsequent day or two, after which time they begin to pick up insects and grain for themselves. But in order to save the trouble of attending them, capons may be taught to watch them in the same manner as hens. M. de Reaumur says, that he has seen more than two thousand chickens at once, all led about and defended by only three or four capons. It is asserted, that even cocks may be taught to perform this office.

The progress of the incubation of the chicken in the natural way, is a subject too curious, and too interesting, to be passed over without notice. The hen has scarcely sat on the egg twelve hours, before some lineaments of the head and body of the chicken appear. The heart may be seen to beat at the end of the second day; it has at that time somewhat the form of a Horse-shoe, but no blood yet appears. At the end of two days, two vesicles of blood are to be distinguished, the pulsation of which is very visible: one of these is the left ventricle, and the other the root of the great artery. At the fiftieth hour, one auricle of the heart appears, resembling a noose folded down upon itself. The beating of the heart is first observed in the auricle, and afterwards in the ventricle. At the end of seventy hours, the wings are distinguishable; and on the head two bubbles are seen for the brain, one for the bill, and two others for the fore and hind part of the head. Towards the end of the fourth day, the two auricles, already visible, draw nearer to the heart than before. The liver appears towards the fifth day. At the end of a hundred and thirty-one hours, the first voluntary motion is observed. At the end of seven hours more, the lungs and stomach become visible; and four hours after this, the intestines, the loins, and the upper jaw. At the hundred

COCK.

and forty-fourth hour, two ventricles are visible, and two drops of blood instead of the single one which was seen before. On the seventh day, the brain begins to have some consistence. At the hundred and nintieth hour of incubation, the bill opens, and the flesh appears in the breast; in four hours more, the breast-bone is seen; and in six hours after this, the ribs appear to be forming from the back, and the bill is very visible, as well as the gall-bladder. The bill becomes green at the end of two hundred and thirty-six hours; and if the chicken be taken out of its coverings, it evidently moves itself. The feathers begin to shoot out towards the two hundred and forti:e h hour, and the skull becomes gristly. At the two hundred and sixty-fourth hour, the eyes appear. At the two hundred and eighty-eighth, the ribs are perfect. At the three hundred and thirty-first, the spleen draws near the stomach, and the lungs to the chest. At the end of three hundred and fifty-five hours, the bill frequently opens and shuts; and at the end of the eighteenth day, the first cry of the chicken is heard. It afterwards gets more strength, and grows continually, till at length it is enabled to set itself free from its confinement.

In the whole of this process, we must remark that every part ap pears exactly at its proper time: if, for example, the liver is formed on the fifth day, it is founded on the preceding situation of the chicken, and on the changes that were to follow. No part of the body could possibly appear either sooner or later, without the whole embryo suffering; and each of the limbs becomes visible at the fit moment This ordination, so wise and so invariable, is manifestly the work of a Supreme Being: but we must still more sensibly acknowledge his creative powers when we consider the manner in which the chicken is formed out of the parts which compose the egg. How astonishing must it appear to an observing mind, that in this substance there should be, at all, the vital principle of an animated being! That all the parts of an animal's body should be concealed in it, and require nothing but heat to unfold and quicken them! That the whole formation of the chicken should be so constant and regular! That, exactly at the same time, the same changes should take place in the generality of eggs! That the chicken, the moment it is hatched, should be heavier than the egg was before! But even these are not all the wonders in the formation of a bird from the egg: (for this instance will serve to illustrate the whole of the feathered tribes:) there are others, altogether hidden from our observation; and of which from our very limited faculties, we must ever remain ignorant.

I cannot take leave of this animal, without a few observations on the savage diversion of cock-fighting; which (to the disgrace of a Christian nation) is encouraged, not merely by the lowest and meanest, but by some persons even in the highest ranks of society. The Shrove-Tuesday massacre of throwing at these unfortunate animals is, indeed, almost discontinued: but the cock-pit yet remains a reproach to the character of Englishmen. The refinements which in England have taken place in the pitting of these courageous birds against each other, would strike almost the rudest of the savage tribes of mankind with horror. The Battle-royal and the Welsh-main would scarcely

be tolerated by any other nation of the world. In the former an unlimited number of cocks are pitted, of which only the last surviving bird is accounted the victor. Thus, suppose there was at first sixteen pair of cocks: of these, sixteen are killed; the remaining sixteen are pitted a second time; the eight conquerors of these are pitted a third time; the four conquerors a fourth time; and lastly, the two conquerors of these the fifth time: so that (incredible barbarity!) thirty-one cocks must be inhumanly murdered in a single battle.

"Are these your sovereign joys, Creation's lords?
Is death a banquet for a godlike soul?"

The greatert rivals of the English in the practice of cock-fighting, are the inhabitants of Sumatra and some other parts of the East. They indeed pay, perhaps a greater attention to the training and feeding of the birds. They arm one of the legs only, not with a slender gaff, but with a little implement in the form of a scimeter, with which the animals make the most terrible destruction. The Sumatrians fight their cocks for vast sums: a man has been known to stake his wife or children, and a son his mother or sisters, on the issue of a battle. In disputed points, four arbitrators are appointed; and if they cannot agree, there is no appeal but to the sword. Some of these people have a notion that their cocks are invulnerable: a father on his death-bed has, under this persuasion, been known to direct his son to lay his whole property on a certain bird, fully persuaded of consequent success.

THE DOMESTIC FOWLS.

The domestic fowls are too well known to need much description There are many varieties, the most conspicuous of which are the Cochin-China, Crested, Bantam, and Bankiva. The Game Fowl was formerly in great request for the cruel sport of cock-fighting, an amusement which, although happily now almost extinct, was in great vogue but a few years since. The Java Fowl, of which the enormous Cochin-China bird is a variety, is supposed to be the origin of the Barn-door fowl. The cock has been long celebrated for his warlike propensities, and his habit of greeting the approach of morn by his "shrill clarion."

PERSIAN COCK.

THE COCHIN-CHINA FOWL.

A young hen of the Cochin-China breed, when introduced among the other poultry of a farm-yard, was shamefully persecuted by its companions. It was very absurd to see the poor creature pecking up a stray crumb or two outside the general circle, and flying in terror before a little game hen, if it ventured to approach too close. The principal advantage of this bird seems to be that the chickens, from their superior size, are ready for the market at an earlier age than those of the ordinary fowl.

COCHIN-CHINA FOWL.

Among other distinctive characteristics, these fowls possess one which is too striking not to be mentioned. The wing is jointed, so that the posterior half can at pleasure be doubled up, and brought forward between the anterior half and the body. The birds can do this at pleasure; and the appearance the manœuvre imparts to their form, has procured for them the title of "Ostrich fowl."

THE DORKING FOWL.

This bird is highly esteemed where ever it has been bred in its purity. Many spurious ones have been passed off on the uninformed, and therefore the general reputation of the breed is not as good as it should be. It is not a heavy fowl, at best; but is an excellent layer, the best of mothers and its meat is delicate and inviting. The average weight of the Dorking is about six and a half to seven pounds for cocks, and five to six pounds for hens. The bird owes its name to its having been bred in a town in Surrey, England, of the same appellation. Its most striking peculiarity is the having of five toes, or two hind toes instead of one. The color of the Dorking is generally pure white, spotted or spangled with black. These colors sometimes merge into a gray or grizzle.

This has been called the Capon Fowl of England; and it forms the chief supply of the London market. Its flesh is extremely delicate, especially after caponization. Writers on poultry breeding differ much in the description of the true fowl. But the following are the prominent points without which the breed is impure:—"A fine head,

with brilliant, reddish tinged eyes, by some termed ferret-eyed; single or double-comb, in both sexes; a graceful neck, rather short than long; wide, deep, projecting breast; the body is not only long, but round, rather than flat or square; and the legs, considering their size, short, and invariably of a silver white." The Dorking is very hardy, and its young are easily reared; both of which are very important recommendations for fowls in the Northern and Eastern States. When crossed with other birds they invariably improve the form, and the quality of the meat.

DORKING FOWL.

These birds have been long prized, and it is now many years since their superiority over our ordinary domestic varieties, was discovered and appreciated. They were first noticed and the variety adopted by the Cumberland breeders, whence they were carried into Lancashire and Westmoreland, and gradually spread over all England. They are also found in many parts of Ireland. Whether, however, it is the result of injudicious treatment, imperfect feeding, or change of climate, when met with far from the region where they originated, they appear to have lost much of their superiority.

THE BANTAM FOWL.

This beautiful little domestic bird came originally from the province of Bantam, in Java. In this country, we have every kind of color and comparative size of "Bantam," but in their *purity*, the "Sir John Seabright," "the Java," or the "African" varieties, are rare birds. "This bird," says Richardson, "has its legs perfectly naked to the toes, and approaches in form more nearly to the game breed. The high bred cock of this breed should have a *rose* comb, full hackles, a well-feathered and well-carried tail, a stately and courageous

demeanor, and should not be quite a pound weight. The favorite color is a golden yellow, the feathers edged with black, the wings barred with purple, tail-feathers and breast black. The Bantam will fight with great resolution." Occasionally, a variety is met with that is smooth-legged. They are very domestic, often making their nests in the kitchen and the cupboards of the dwelling, when permitted. They are excellent layers and good nurses.

THE BANTAM FOWL.

The hackles, or long neck feathers of this and the preceding bird, are much used by anglers for making artificial flies.

THE POLISH FOWL.

This beautiful bird has become pretty generally known in the American farm-yard. It is, however, a small fowl, in comparison with many other. "Of the Polish fowls," says Richardson, "there are three sub-varieties, one of which would appear to be nearly, if not altogether extinct in its native country. This fowl is, perhaps, the most unchanged from the primitive stock of any we are now acquainted with, being, beyoud doubt, the immediate and almost unmixed descendant of the wild cock of St. Jago." The three varieties are—*The Spangled Polish*—a bird of extraordinary beauty, and difficult to be procured. In color, it presents a splendid combination of a bright orange, a clear white, a brilliant green, and a jetty black, softened down with a rich and pure brown: every feather is tipped with white so as to produce the effect whence has been derived the term spangled. The flesh of these birds is of good quality, and they are very prolific. The fowl known as the Golden Pheasant is a cross of this variety and the Black Polish fowl.

POLISH FOWL.

The second variety of the Polish fowl, is the well known Black fowl, with a white tuft on the crown. Their appearance is hands ome

and being very good layers, they are hightly esteemed. The third variety entirely white, without a feather of any other color. They are very beautiful, but not quite so hardy as the Black.

THE SHANGHÆ FOWL.

The Shanghæ fowl has become generally known in the Northern States, and especially in New England. It was brought from Shanghæ, China, in 1848, by Captain Forbes, and since that time other importations of the species have been effected. There are two varieties, which may be distinguished as the yellow including the brown buff

SHANGHÆ.—MALE.

SHANGHÆ.—FEMALE.

and the fawn colored,) and the white. The yellow, in general shape and appearance, resembles the Cochin-China fowls, though they have greater depth of quarters and less depth of breast, and are of a lighter color. Their general plumage is of a bright yellow, or gold color, variegated with dark brown and red. They are quiet tempered, their gait is proud and showy, but the legs are rather too long for beauty. For laying properties, early maturity, and table use, there is no better species in America. The principal characteristics of the Yellow Shanghæ, by which they may be distinguished from the Cochin China fowl is, that the legs are covered with feathers. The White Shanghæ, partakes of all the characteristics of the Yellow, with the exception of color. Its legs are yellow, and very heavily feathered. Their general appearance is cleanly and beautiful, and in laying, or for food, they are quite equal to the Yellow species.

THE SPANISH FOWLS.

The Black Spanish fowls are favorites among the poulterers. They are large, showy, and possess the blackest of plumage. They have an unusually large comb and wattles, and a white cheek. As table birds, their flesh is particularly white, tender and juicy. The hens are layers of the first order, being extremely prolific, easy fed, and easy to control, when required to sit. "I regard these birds," says Richardson, "as the result of the highest *artificial* culture," and in support of his opinion, he adduces their unusually large comb and wattles, characteristics not found in the primitive varieties. The eggs are of large size, fine-flavored, and unlike most of the eggs from dark colored poultry, the shells are *white as alabaster.*

SPANISH FOWLS.

THE BANKIVA FOWL.

This fowl is supposed to be the original stock, of our domestic varieties. Dickson thus describes it:—"The cock has a thin, indented, or scolloped comb, and wattles under the mouth: the tail a little elevated above the rump, and the feathers somewhat disposed in the form of tiles. The feathers of the neck are long, falling down, and rounded at the tips, and are of the finest gold color. The head and neck are fawn-colored; the wing coverts are dusky, brownish and black; the tail and belly are black; the hen is of a dusky, ashy gray and yellowish color, and has her comb and beard much smaller than the cock, with no feathers on the neck, besides the long hackles."

The Bankiva cock is nearly twice as large as the common Bantam. The hen is scarcely as large as Sonnerat's Jungle fowl. The breed is native to the East Indies, where it is much valued by the lovers of cock-fighting. The Bankiva is very bold and spirited, though inferior to Sonnerat's fowl in these qualities as in others more valuable. It was for some time a question, whether this fowl was not derived from the same stock as the larger Jungle fowl; but the question has been determined in favor of its being a distinct variety.

THE FIRE-BACKED JUNGLE FOWL.

This noble species is larger than the domestic game breed, and stands high on the legs. The spurs are sharp. The head is adorned wiih a crest of naked shafted feathers, and the bill is partly covered with a purplish skin. The general plumage is black shot with gleaming steel-blue. The lower part of the back is rich flame color.

FIRE-BACKED JUNGLE FOWL.

The female is a rich cinnamon brown, mottled with black; throat white, head erected, tail folded. This species came originally from Sumatra, and is highly esteemed by fanciers.

This species was first introduced to science by Sir George Staunton, in his narrative of an "Embassy to China." His host at Batavia, among other interesting specimens of natural history, possessed one of these birds, which was sent to England. The bending feathers of the tail are shorter and much broader than those of the Bankiva, Sonnerat, or Domestic cock. The Fire-backed fowl is intermediate between the largest Jungle fowl, and the domestic game breed. It possesses the quick spirit of all the best game-breeds, and is much prized among the lovers of cock-fighting. Numerous specimens are to be seen in various parts of New England; and at the poultry exhibitions, its elegant form and spirited bearing, together with its beautiful hues, make it an attractive and favorite bird. The hen is considered a very good layer, nurse and sitter, and the eggs are a good size.

SONNERAT'S JUNGLE FOWL.

This splendid bird is celebrated for its courage, and is in great request among the cock-fighters of Hindostan. Its port is erect and stately, and its form is admirable. In size it is equal to the domestic fowl; but it is lighter and more graceful. The comb is slightly indented, the wattles are large and double; the markings as represented in the figure. The female is a third less in size than the male.

SONNERAT'S JUNGLE FOWL.

As this species of Jungle fowl is one of the most sought for among the cock-fighters of India, a short account of the manner in which that sport is pursued in Hindostan and the island of Polynesia, may not be uninteresting, or out of place. It is from *Ellis' Polynesian Researches.*

"Cocks of the same color are never matched, but a gray against a pile, a yellow against a red, or the like. This might have been originally designed to prevent disputes, or knavish impositions. The Malay breed of cocks is much esteemed by connoisseurs who have had an opportunity of trying them. Great pains is taken in the rearing and feeding; they are frequently handled, and accustomed to spar in public, in order to prevent any shyness. Contrary to our laws, the owner is allowed to take up and handle his cock during the battle; to clear his eye of a feather, or his mouth of blood. When a cock is killed, or runs, the other must have sufficient spirit and vigor left to peck at him three times, on his being held to him for that purpose, or it becomes a drawn battle; and sometimes an experienced cocker will place the head of his vanquished bird in such an uncouth posture, as to terrify the other, and render him unable to give this proof of victory. The cocks are never trimmed, but matched in full feather. The artificial spur used in Sumatra, resembles in shape the blade of a scimetar, and proves a more destructive weapon than the European spur. It has no socket, but is tied to the leg, and in the position of it the nicety of the match is regulated. As, in horse-racing, weight is

proportioned to inches, so, in cocking, a bird of superior size and weight is brought to an equality with his adversary, by fixing the steel spur so many scales of the leg above the natural spur, and thus obliging him to fight with a degree of disadvantage. It rarely happens that both cocks survive the combat.

Some attempts have lately been made by writers on poultry, to defend the sport of cock-fighting, on the ground, that the disposition of the fowl is to fight, and that in training them for that purpose, men only make amusement of that which is necessary. But this is merely an ingenious argument. All such contests have a brutalizing influence on men.

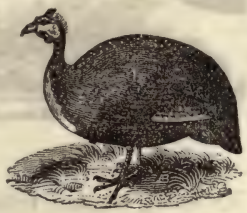
OF THE PINTADO TRIBE.

THE bill is strong and short, and the base is covered with a warty or carunculated cere, which receives the nostrils: on the head there is a horny or callous protuberance. The tail-feathers are short, and bend downward. The feathers of the body are speckled.

The four species of pintado hitherto known are all natives of Africa, and of islands adjacent to the African coast. Their mode of feeding is similar to that of the domestic poultry; they scrape the ground with their feet, in search of insects, worms. and seeds.

THE COMMON GUINEA-FOWL.

In a wild state it is asserted that these birds associate in numerous flocks. Dampier speaks of having seen between two and three hundred of them together, in the Cape de Verd Islands. They were originally introduced into England from the coast of Africa, somewhat earlier than the year 1260.



GUINEA-FOWL.

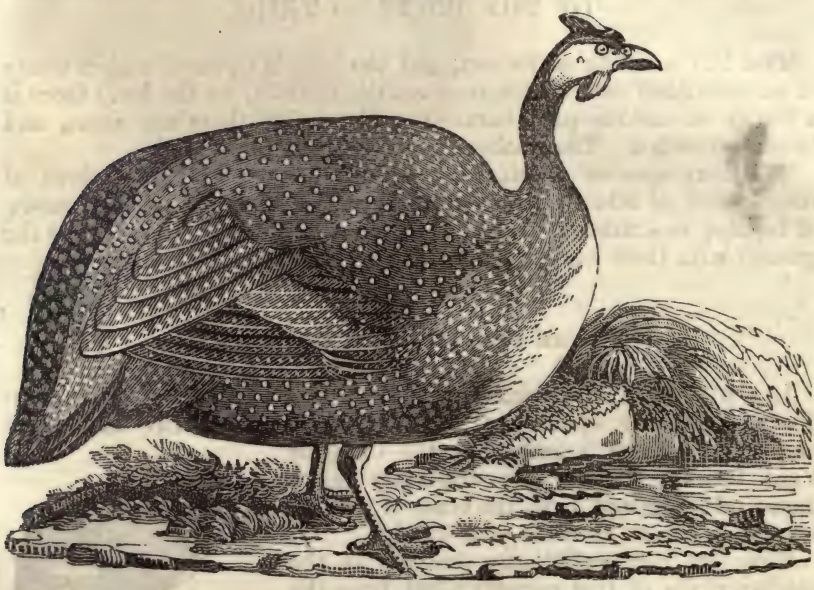
They are now sufficiently common in the poultry-yards of this country; but from the young-ones being difficult to rear, they are not bred in numbers at all equal to those of the domestic poultry. The females lay and hatch their eggs nearly in the same manner as the common hens. The eggs, however, are smaller than those of the hen, and have a harder shell. M. de Buffon states that there is a remarkable difference between the eggs of the domestic Guinea-Fowls, and of those which are wild; the latter being marked with small, round spots, like those on the plumage of the birds; and the former being, when first laid, of a tolerably bright red, and afterwards of the faint color of a dried rose. The young birds, for some time after they come into the world, are destitute of the helmet, or callous protuberance which is so conspicuous on the heads of the old ones.

The voice of the Guinea-Fowl is harsh, and, to some persons, unpleasant. It consists chiefly of two notes, *ca-mac*, *ca-mac*, *ca-mac*,

frequently repeated. The Guinea-Fowl is a restless and clamorous bird. During the night it perches on high places; and, if disturbed, alarms every animal within hearing, by its unceasing cry. These birds delight in rolling themselves in the dust, for the purpose, as some naturalists have conjectured, of ridding themselves of insects.

If trained when young, Guinea-Fowls may soon be rendered tame. M. Bruë informs us, that when he was on the coast of Senegal, he received as a present from an African princess, two Guinea-Fowls. Both these birds were so familiar, that they would approach the table and eat out of his plate; and when they had liberty to fly about upon the beach, they always returned to the ship, when the dinner or supper bell rang.

It is even said that the wild birds will sometimes receive food from



GUINEA-FOWL.

the hand, almost immediately after they are caught. These delight chiefly in marshy and morassy places, where they subsist almost wholly on insects, worms, and seeds. Guinea-Fowls are found in nearly all the countries of the western part of Africa, from Barbary, southward, to the Cape of Good Hope. They are natives likewise of the Islands of France and Bourbon, of Madagascar and Cape de Verd.

Amongst the Romans they were in great repute for the table; and, on account of their scarcity, were generally sold for high prices. They are at present much esteemed in this country, their flavour being considered, by some persons, to resemble that of the Pheasant. The eggs are a very delicate food.

OF THE GROUSE IN GENERAL.

THE Grouse have strong, convex bills; and some of the species have a naked scarlet skin above each eye. The flesh of all the species is brown, but is excellent food.

The birds of this tribe which are known in Great Britain, are the different species of Grouse, Partridges, and Quails. Of these, the Grouse are inhabitants chiefly of bleak and mountainous tracts of country. To defend them from the effects of cold, their legs are feathered down to the toes. The nostrils are small, and are hidden under the feathers. Their legs are stout, and the tail generally long. Partridges and Quails in habit the warmer and more cultivated parts of the country. Their tail is short, and their nostrils are covered with a hard prominent margin.

THE GROUSE.

THE RUFFED GROUSE.

The size of this bird is between that of a Pheasant and Partridge. The bill is brownish. The head is crested; and as well as all the upper parts, is variegated with different tints of brown mixed with black. The feathers on the neck are long and loose; and may be erected at pleasure, like those of the cock. The throat and the fore part of the neck are orange brown; and the rest of the under parts are yellowish white, having a few curved marks on the breast and sides. The tail consists of eighteen feathers, all of which are crossed with narrow bars of black, and with one broad band of the same near the end. The legs are covered to the toes (which are flesh-colored, and pectinated on the sides) with whitish hairs.

This beautiful species of Grouse, known by the name of *Pheasant* in the Middle and Western States, and by that of *Partridge* in New England, is found to inhabit the continent from Hudson's Bay and the parallel of 56° to Georgia, but are most abundant in the Northern and Middle States, where they often prefer the most elevated and wooded districts; and at the south they affect the mountainous ranges of valleys which border upon, or lie within the chains of the Alleghanies. They are also prevalent in the Western States as far as the line of the State of Mississippi, and though not found on the great western plains they appear in the forests of the Rocky Mountains, and follow the Columbia nearly to the Pacific.

Although, properly speaking, sedentary, yet at the approach of autumn, according to Audubon, they make, in common with the following species, partial migrations by single families in quest of a supply of food, and sometimes even cross the Ohio in the course of their peregrinations. In the northern parts of New England they appear also to be partially migratory at the approach of winter, and leave the hills for lower and more sheltered situations.

THE RUFFED GROUSE.

He is a fine bird when his gaiety is displayed; that is, when he spreads his tail like that of a Turkey-cock, and erects the circle of feathers round his neck like a ruff, walking with a stately and even pace, and making a noise somewhat like that of a Turkey. This is the moment which the sportsman seizes to fire at him: for, if the bird observes that he is discovered, he immediately flies off to a distance of several hundred yards before he again alights.

There is something very remarkable in what is called the *thumping* of these birds. This they do, as the sportsmen

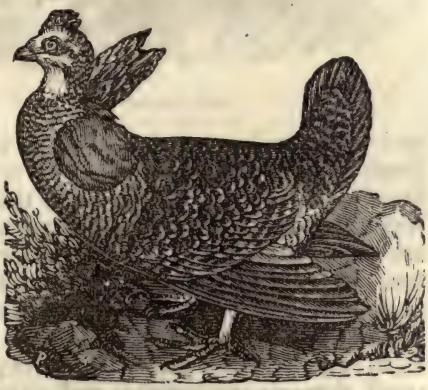
RUFFED GROUSE DRUMMING.

tell us, by clapping their wings against their sides. They stand upon an old fallen tree, and in this station begin their strokes gradually, at about two seconds of time from another, and repeat them quicker and quicker, until they make a noise not unlike distant thunder. This continues, from the beginning, about a minute; the bird ceases for six or eight minutes, and then begins again. The sound is often heard at the distance of nearly half a mile; and sportsmen take advantage of this note, to discover the birds, and shoot them. The Grouse commonly practise their *thumping* during the spring and fall of the year, at about nine or ten o'clock in the morning, and four or five in the afternoon.

These birds lay their eggs, from twelve to sixteen in number, in nests which they make either by the side of fallen trees, or the roots of standing ones. Mr. Brooke, when a boy, says that he has found their nests, and has endeavored to take the old birds, but never could succeed. The sitting bird would let him put his hand almost upon her before she would quit her nest; then by artifice would draw him off from her eggs, by fluttering just before him for a hundred paces or more, so that he has been in constant hopes of taking her. When the nestlings are hatched, and a few days old, they hide themselves so artfully among the leaves, that it is difficult to find them.

THE PINNATED GROUSE, OR PRAIRIE HEN.

This species celebrated for the exquisite flavor of its flesh, is strictly confined to the western prairies of our country, open dry plains interspersed with shrub-oak being its favorite haunts. The male is remarkable for a naked sacculated appendage on each side of the neck, resembling a large orange. In severe weather the Prairie Hens sometimes mix with the domestic poultry in pursuit of food.



THE PINNATED GROUSE, OR PRAIRIE HEN.

THE BLACK GROUSE.

The weight of an old black cock is nearly four pounds; but that of the female is not often more than two. The plumage of the whole body of the male is black, and glossed over the neck and rump with a shining blue. The coverts of the wings are of a dusky brown: the four first quill-feathers are black, the next white at the bottom. The lower half, and the tips, of the secondary feathers, are white. The

inner coverts of the wings are white. The tail is much forked: the exterior feathers bend greatly outward, and their ends seem as if cut off. The colors of the female differ considerably from those of the male: the tail also is but slightly forked.

BLACK GROUSE.—MALE.

They are partial to mountainous and woody situations, far removed from the habitations of men.

Their food is various; but principally consists of the mountain fruits and berries, and, in winter, of the tops of heath. It is somewhat remarkable that cherries and peas are fatal to these birds. They perch and roost in the same manner as the Pheasant.

The Black Grouse never pair; but in spring the males assemble at their accustomed resorts on the tops of heathy mountains, where they *crow* and *clap their wings*. The females, at this signal, resort to them. The males are very quarrelsome, and fight together like game-cocks. On these occasions they are so inattentive to their own safety, that two or three have sometimes been killed at one shot: and instances have occurred of their having been knocked down with a stick.

The female forms an artless nest on the ground; and lays six or eight eggs, of a dull yellowish white color, marked with numerous very small ferruginous specks, and, towards the smaller end, with some blotches of the same. These are hatched late in the summer. The young males quit the parents in the beginning of winter, and keep together in flocks of seven or eight till the spring.

In Russia, Norway, and other extreme northern countries, the Black Grouse are said to retire under the snow during winter. The shooting of them in Russia is thus conducted:—Huts full of loopholes, like little forts, are built for the purpose, in woods frequented by these birds. Upon the trees within shot of the huts, are placed artificial decoy-birds. As the Grouse assemble, the company fire through the openings; and so long as the sportsmen are concealed,

the report of the guns does not frighten the birds away. Several of them may therefore be killed from the same tree, when three or four happen to be perched on branches one above another. The sportsman has only to shoot the undermost bird first, and the others upward in succession. The uppermost bird is earnestly employed in looking down after his fallen companions, and keeps chattering to them till he becomes himself a victim.

BLACK GROUSE.—FEMALE.

During winter the inhabitants of Siberia take these birds in the following manner:—A number of poles are laid horizontally on forked sticks, in the open birch forests. Small bundles of corn are tied on these, by way of allurement; and, at a little distance, some tall baskets of conical shape are placed, having their broad parts uppermost. Within the mouth of each basket is placed a small wheel; through which passes an axis so nicely fixed, as to admit it to play very readily, and, on the least touch either on one side or the other, to drop down, and again recover its situation. The Black Grouse are soon attracted by the corn on the horizontal poles. The first comers alight upon them, and after a short repast fly to the baskets, and attempt to settle on their tops; when the wheel drops sideways, and they fall headlong into the trap. These baskets are sometimes found half-full of birds thus caught.

THE RED GROUSE, OR RED GAME.

THE RED GROUSE

The weight of the male is about nineteen and of the female fifteen ounces. The bill is black; and at the base of the lower mandible there is on each side a white spot. Each eye is arched with a large, naked, scarlet spot. The throat is red. The plumage of the upper parts of the body is mottled with dusky red and black. The breast and belly are purplish, crossed with small dusky lines.

COCK OF THE PLAINS.

This large and beautiful species of Grouse, little inferior to the Turkey in size, and the American counterpart of the Cock of the Woods, was first seen by Lewis and Clarke in the wild recesses within the central chains of the Rocky Mountains, from whence they extend in accumulating numbers to the plains of the Columbia, and are common throughout the Oregon Territory, as well as the neighboring province of California.

The flight of this large bird is slow, unsteady, and attended with a whirring sound, the wings being kept in a hurried motion, as in most other Grouse. It also runs much on the ground in the manner of the Turkey, and is not very partial to taking wing. Their starting cry, like that of the common Pheasant, is a sort of *'kuk, 'kuk, 'kuk.* They begin to pair in March and April; and at this time repair to eminences on the banks of streams where they are seen assembled about sun-rise. The male lowers his wings, and produces a humming sound as he trails his outspread pinions on the ground; the tail, at the same time, is spread out like a fan, and the bare space on the breast is also accompanied by a large inflation. He then struts proudly in the presence of his intended mate, uttering a confused and disagreeable *'hurr-hurr-r-r-r-hoo'* ending in a deep and hollow tone, like the sound produced by blowing into a cane. They nest on the ground under the shelter of low bushes, or near streams among the wild Canary Grass of this region. The nest is made of dry grass and slender twigs. The eggs, from thirteen to seventeen, about the size of those of the domestic fowl, are of a wood brown color, with irregular chocolate blotches at the thick end. The period of incubation extends from twenty-one to twenty-two days; and as in other birds of this active tribe the young run about and quit the nest in few hours after being hatched. In summer and autumn, these large Grouse are seen only in small numbers, pairs or families, but in winter and spring, partially migratory, they are then seen in flocks of several hundreds, roaming about in

quest of food. They are plentiful throughout the barren and arid plains of the Columbia, as well as in the interior of North California, but are nowhere seen to the east of the Rocky Mountains.

THE WHITE GROUSE, OR PTARMIGAN.

The Ptarmigan is somewhat larger than a Pigeon. Its bill is black; and its plumage, in summer, is of a pale brown color, elegantly mottled with small bars and dusky spots. The head and neck are marked with broad bars of black, rust-color, and white. The wings and belly are white.

These birds moult in the winter months, changing at this season their summer dress for one more warm; and, instead of having their feathers of many colors, they then become white. By a wonderful provision, every feather also, except those of the wings and tail, becomes double; a downy one shooting out at the base of each, which gives an additional protection against the cold.

Their feet, by being feathered entirely to the toes, are well protected from the cold. Every morning the birds take a flight directly upward into the air, apparently to shake the snow from their wings and bodies. They feed in the mornings and evenings, and in the middle of the day they bask in the sun.

About the beginning of October the Ptarmigans assemble in flocks of a hundred and fifty or two hundred, and live much among the willows, the tops of which they eat. In December they retire from the flats about Hudson's Bay to the mountains, to feed on the mountain berries. Some of the Greenlanders believe that Ptarmigans, in order to provide a subsistence through the winter, collect a store of mountain berries into some crevice of a rock near their retreat; and it is generally supposed, that, by means of their long, broad, and hollow nails, they form lodges under the snow, where they lie in heaps to protect themselves from the cold. During winter they are often seen flying in great numbers among the rocks.

Though sometimes found in the mountains of the north of Scotland, the Ptarmigans are chiefly inhabitants of that part of the globe which lies about the Arctic Circle. Their food consists of the buds of trees, young shoots of pine and heath, and of fruits and berries which grow on the mountains. They are so stupid and silly, as often to suffer themselves, without the least difficulty, to be knocked on the head, or to be driven into any snare that is set for them. They frequently stretch out their neck, apparently in curiosity, and remain otherwise unconcerned, while the fowler takes aim at them. When frightened, they fly off; but immediately afterwards they alight, and stand staring at their foe. If the hen bird be killed, it is said that the male will not forsake her, but may then also be killed. So little alarmed are these birds at the presence of mankind, as even to bear driving like poultry; yet, notwithstanding this apparent gentleness of disposition, it is impossible to domesticate them; for when caught they refuse to eat, and they always die soon afterwards.

Their voice is very extraordinary: and they do not often exert it except in the night. Ptarmigans are seldom found in Sweden; and one of these birds, several years ago, happening to stray within a hundred miles of Stockholm, very much alarmed the common people of the neighborhood; for, from its nightly noise, a report was circulated that the wood, where it had taken up its residence, was haunted by a ghost. So much were the people terrified by this supposed sprite, that, for a considerable time, nothing could tempt the post-boys to pass the wood after dark. The spirit, however, was at last removed, by a gamekeeper shooting the bird.

Ptarmigans form their nests on the ground, in dry ridges; and lay from six to ten dusky eggs with reddish-brown spots.

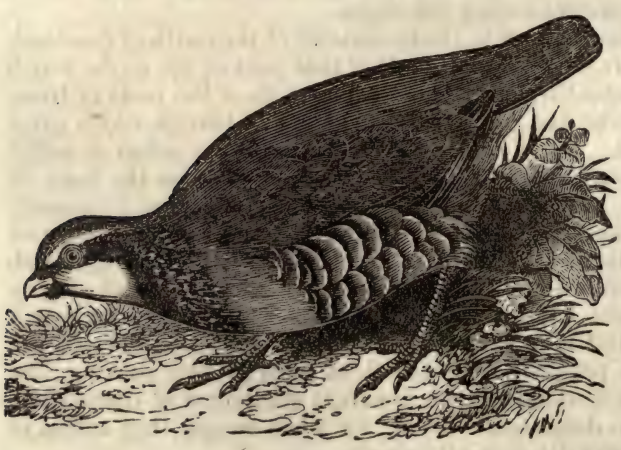
The usual method of catching these birds is by nets made of twine twenty feet square, connected to four poles, and propped with sticks in front. A long line is fastened to these, the end of which is held by a person who lies concealed at a distance. Several people drive the birds within reach of the net; which is then pulled down, and is often found to cover fifty or sixty of them. Ptarmigans are in such plenty in the northern parts of America, that upwards of ten thousand are frequently caught for the use of the Hudson's Bay Settlement, between November and May.

The Laplanders catch these birds by means of a hedge formed with the branches of birch-trees, and having small openings, at certain intervals, with a snare in each. The birds are tempted to feed on the buds and catkins of the birch; and whenever they endeavor to pass through the openings, they are instantly caught.

They are excellent food; and in taste are so like the common grouse, as to be scarcely distinguishable from it.

THE PARTRIDGE.

The extremes of heat and cold are alike unfavorable to the propagation of the Partridge. This bird also flourishes best in cultivated countries living principally on the labors of the husbandman. In Sweden Partridges burrow beneath the snow; and the whole covey crowd together under this shelter, to guard against the in-



PARTRIDGE.

tense cold. In Greenland, the Partridge is brown during summer; but as soon as the winter sets in, it becomes clothed with a thick and warm down, and its exterior feathers assume the color of the snow.

Partridges have ever held a distinguished place at the tables of the luxurious, both in Europe and America. We have an old distich:

> "If the Partridge had the Woodcock's thigh,
> 'Twould be the best bird that e'er did fly."

They pair about the third week in February; and sometimes, after pairing, if the weather be very severe, they collect together, and again form into coveys. In May the female lays her eggs, usually from fifteen to eighteen in number, in a rude nest of dry leaves and grass, formed upon the ground; these are of a greenish-gray color. The period of incubation is three weeks. So closely do these birds sit on their eggs when near hatching, that a Partridge with her nest has been carried in a hat to some distance, and in confinement has continued her incubation, and there produced young-ones. The great hatch is about the first ten days in June; and the earliest birds begin to fly towards the latter end of that month. The young brood are able to run about as soon as they are hatched, and they are even sometimes seen encumbered with a piece of the shell sticking to them. The parents immediately lead them to ant-hills, on the grubs of which insects they at first principally feed.

At the season when the Partridge is produced, the various species of Ants loosen the earth about their habitations. The young birds. therefore, have only to scrape away the earth, and they can satisfy their hunger without difficulty. A covey that some years ago excited the attention of the Rev. Mr. Gould, gave him an opportunity of remarking the great delight which they take in this kind of food. On his turning up a colony of Ants, and withdrawing to some distance, the parents conducted their young ones to the hill, and fed very heartily. After a few days they grew more bold, and ventured to eat within twelve or fourteen yards of him. The surrounding grass was high; by which means they could, on the least disturbance, immediately run out of sight and conceal themselves. This is an excellent food for Partridges that are bred up under a domestic hen; if constantly supplied with Ants' grubs and fresh water, the birds seldom fail to arrive at maturity. Along with the grubs it is recommended to give them, at intervals, a mixture of millepedes, or wood-lice, and earwigs; fresh curds mixed with lettuce, chickweed, or groundsel, should also be given them.

The affection of Partridges for their offspring is peculiarly interesting. Both the parents lead them out to feed; they point out to them the proper places for their food, and assist them in finding it by scratching the ground with their feet. They frequently sit close together, covering the young-ones with their wings; and from this protection they are not easily roused. If, however, they are disturbed, most persons acquainted with rural affairs know the confusion that

ensues. The male gives the first signal of alarm, by a peculiar cry of distress; throwing himself at the same moment more immediately into the way of danger, in order to mislead the enemy. He flutters along the ground, hanging his wings, and exhibiting every symptom of debility. By this stratagem he seldom fails of so far attracting the attention of the intruder, as to allow the female to conduct the helpless, unfledged brood into some place of security. "A Partridge (says Mr. White, who gives an instance of this instinctive sagacity) came out of a ditch, and ran along shivering with her wings, and crying out as if wounded and unable to get from us. While the dam feigned distress, a boy who attended me saw the brood, which was small and unable to fly, run for shelter into an old fox-hole, under the bank." Mr. Marwick relates, that " once as he was hunting with a young Pointer, the dog ran on a brood of very small Partridges. The old bird cried, fluttered, and ran tumbling along just before the dog's nose, till she had drawn him to a considerable distance; when she took wing and flew further off, but not out of the field. On this the dog returned nearly to the place where the young-ones lay concealed in the grass; this the old bird no sooner perceived than she flew back again, settled just before the dog's nose, and a second time acted the same part, rolling and tumbling about till she drew off his attention from her brood, and thus succeeded in preserving them." This gentleman says also that, when a Kite was once hovering over a covey of young Partridges, he saw the old birds fly up at the ferocious enemy, screaming and fighting with all their might to preserve their brood.

The eggs of the Partridge are frequently destroyed by Weasels, Stoats, Crows, Magpies, and other animals. When this has been the case, the female frequently makes another nest and lays afresh. The produce of these second hatchings are those small birds that are not perfectly feathered in the tail till the beginning of October. This is always a puny, sickly race,; and the individuals seldom outlive the rigors of the winter.

It is said that those Partridges which are hatched under a domestic hen, retain through life the habit of *calling* whenever they hear the clucking of hens.

The Partridge, even when reared by the hand, soon neglects those who have the care of it; and, shortly after its full growth, altogether estranges itself from the house where it was bred. This will almost invariably be its conduct, however intimately it may have connected itself with the place and inhabitants in the early part of its existence. Among the few instances of the Partridge's remaining tame, was that of one reared by the Rev. Mr. Bird. This, long after its full growth, attended the parlor at breakfast and other times, received food from any hand that gave it, stretched itself before the fire, and seemed much to enjoy the warmth. At length, it fell a victim to that foe of all favorite birds, a cat.

On the farm of Lion Hall, in Essex, belonging to Colonel Hawker, a Partridge, in the year 1788, formed her nest, and hatched sixteen eggs, *on the top of a pollard oak-tree.* What renders this circumstance

the more remarkable is, that the tree had, fastened to it, the bars of a stile, where there was a footpath; and the passengers, in going over discovered and disturbed her before she sat close. When the brood was hatched, the birds scrambled down the short and rough boughs, which grew out all around from the trunk of the tree, and reached the ground in safety.

In the year 1798, the following occurrence took place at East Dean in Sussex, which will tend to prove that Partridges have no powers of migration. A covey of sixteen Partridges, having been disturbed by some men at plough, directed their flight across the cliff to the sea, over which they continued their course about three hundred yards. Either intimidated, or otherwise affected by that element, the whole were then observed to drop into the water. Twelve of them were soon afterwards floated to shore by the tide, where they were picked up by a boy, who carried them to Eastbourn for sale.

It has long been a received opinion among sportsmen, as well as among naturalists, that the female Partridge has none of the bay feathers of the breast like the male. This, however, on dissection, has proved to be a mistake; for Mr. Montagu happening to kill nine birds in one day, with very little variation as to the bay mark on the breast, he was led to open them all, and discovered that five of them were females. On carefully examining the plumage, he found that the males could only be known by the superior brightness of color about the head; which alone, after the first or second year, seems to be the true mark of distinction.

The California Quail is a beautiful species with a small feather by way of crest on its head.

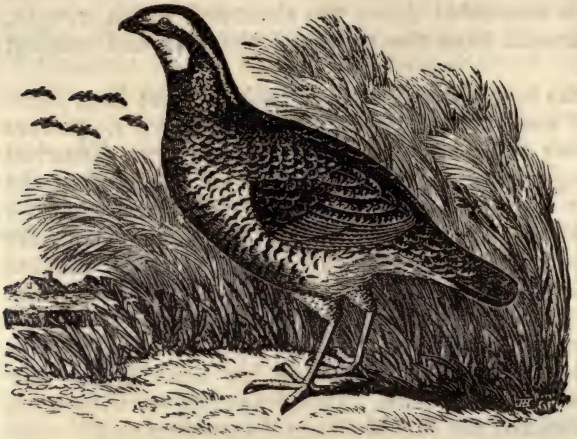
CALIFORNIA PARTRIDGE.

THE QUAIL.

The bill of this bird is of a dusky color. The feathers of the head are black, edged with a rusty brown. The crown of the head is divided by a whitish yellow line, beginning at the bill, and running along the hind part of the neck to the back. Above each eye there is another line of similar color. The chin and throat are of a dirty white. The cheeks are spotted with brown and white. The breast is of a pale yellowish red, spotted with black. The scapular feathers, and those on the back, are marked in the middle with a long, pale, yellow line; and on their sides with ferruginous and black bars. The coverts of the wings are reddish brown, elegantly barred with paler lines, bounded on each side with black. The exterior side of the first quill-feathers is white; and of the others, dusky spotted with red. The tail consists of twelve short feathers, barred with black and very pale brownish red. The legs are of a pale hue.

The Quail is an inhabitant of nearly all countries, and in all it is esteemed excellent food. In appearance it is so like the Partridge,

that it is sometimes called *Dwarf Partridge;* and, in the manners of the two species, there is a resemblance. They feed, form their nest, and rear their young-ones, nearly in the same way. They are, however, in many respects very different. Quails migrate: they are always smaller; and have not a naked space between the eyes, nor the figure of a horse-shoe on their breasts. The eggs too are less than those of the Partridge, and very different in color. Their voices are unlike. Quails seldom live in coveys; except when their wants unite the feeble family to their mother, or some powerful cause urges great numbers to assemble, and traverse together the extent of the ocean, holding their course to the same distant lands. They are much less cunning than the Partridge; and more easily ensnared, especially when young.



THE QUAIL.

The females lay about ten eggs, in the incubation of which they are occupied three weeks. The eggs are whitish; but marked with ragged rust-colored spots. Quails have been supposed, but without foundation, to breed twice in the year.

These birds generally sleep during the day, concealed in the tallest grass; lying on their sides, with their legs extended. So very indolent are these birds, that a Dog must absolutely run upon them before they are flushed; and when they are forced upon wing, they seldom fly far. Quails are easily drawn within reach of a net, by a call imitating their cry, which is not unlike the words *whit, whit, whit:* this is done with an instrument called a quail-pipe.

Quails are found in several parts of Great Britain; and the time of their migration from there is August or September. They are supposed to winter in Africa; and they return early in the spring. At their arrival in Alexandria, such multitudes are exposed in the markets for sale, that three or four may sometimes be bought for a medina (a coin less than three farthings in value.) Crews of merchant-vessels have been fed upon them; and complaints have sometimes been laid at the consul's office, by mariners against their captains, for giving them nothing but Quails to eat.

With wind and weather in their favor, these birds have been known, in the course of one night, to perform a flight of fifty leagues across the Black Sea; a wonderful distance for so short-winged a bird.

Such prodigious numbers of Quails have sometimes appeared on

the western coasts of the kingdom of Naples, that a hundred thousand have, in one day, been caught within the space of three or four miles. Most of these are taken to Rome, where they are in great request, and are sold at high prices. Clouds of Quails also alight, in spring, along the coasts of Provence: especially in the lands belonging to the bishop of Frejus, which border on the sea. Here they are sometimes found so exhausted, that for a few of the first days they may be caught with the hand. In some parts of the south of Russia they abound so greatly, that at the time of their migration they are caught by thousands, and sent in casks to Moscow and Petersburg.

With respect of these birds having an instinctive knowledge of the precise time for emigration, we have a singular fact in some young Quails, which, having been bred in cages from the earliest period of their lives, had never enjoyed, and therefore could not feel, the loss of liberty. For four successive years they were observed to be restless, and to flutter with unusual agitations, regularly in September and April; and this uneasiness lasted thirty days each time. It began constantly an hour before sun-set. The birds passed the whole night in these fruitless struggles; and always on the following day appeared dejected and stupid.

Quails are birds of undaunted courage; and their quarrels often terminate in mutual destruction. This irascible disposition induced the ancient Greeks and Romans to fight them with each other, as the moderns do game-cocks. And such favorites were the conquerors, that in one instance Augustus punished a præfect of Egypt with death for having brought to his table one of these birds which had acquired celebrity for its victories. The fighting of Quails is even now a fashionable diversion in China, and in some parts of Italy.

OF THE BUSTARDS IN GENERAL.

THE Bustards have a somewhat convex bill, with open and oblong nostrils. Their legs are long, and naked above the knees. The feet have only three toes, all placed forward.

There are about twelve different species of Bustards, nearly all of which are inhabitants of the Old Continent.

THE GREAT BUSTARD.

This is one of the largest land-fowl, the male sometimes weighing twenty-five pounds and upwards. The length is nearly four feet, and the breadth nine. The head and neck are ash-colored. The back is

transversely barred with black, and bright rust-color. The belly is white: and the tail, consisting of twenty feathers, is barred with red and black. The legs are dusky. On each side of the lower mandible of the bill there is a tuft of feathers about nine inches long.

The female is not much more than half the size of the male. The top of her head is of a deep orange, and the rest of the head brown. Her colors are not so bright as those of the male, and she wants the tuft on each side of the head.

There is one very essential distinction between the male and the female of this species. The former is furnished with a sac or pouch, situated in the fore part of the neck, and capable of containing more than two quarts of water. The entrance to this pouch is immediately under the tongue. This singular reservoir was first discovered by Dr. Douglass, who supposes that the bird fills it with water, to supply its thirst in the midst of those extensive plains where it is accustomed to wander. The Bustard likewise makes a further use of it, in defending itself against the attacks of birds of prey: on these occasions it throws out the water with such violence, as not unfrequently to baffle the pursuit of its enemy.

GREAT BUSTARD.—MALE.

This bird makes no nest, but the female lays her eggs in some hollow place of the ground, in a dry corn field; these are two in number, as big as those of a goose, and of a pale olive brown, marked with spots of a deeper color. If, during her absence from the nest, any one handle or even breathe upon the eggs, she immediately abandons them. The young ones follow the dam soon after they are excluded from the egg, but they are not capable for some time of flying.

Bustards feed on green corn, the tops of turnips, and other vegetables as well as on worms: and they have been known to eat Frogs, Mice, and also young birds. They are remarkable for their great timidity; they carefully avoid mankind, and are easily driven away in whole herds by the smallest dog.

In England these birds are now and then met with: they frequent the open countries of the south and east parts, from Dorsetshire, as far as the wolds in Yorkshire; and are sometimes, though rarely, seen on Salisbury Plain. They are slow in taking wing, but run with great rapidity; and the young ones are sometimes coursed and taken by Greyhounds.

GREAT BUSTARD.—FEMALE.

THE BLACK HEADED BUSTARD.

This fine species is a native of India and is very generally spread: it occurs in the Himalaya mountains. It is gregarious and the male is furnished with a gular pouch. Its flesh is excellent. It feeds chiefly on Grasshoppers. It is bay colored varied with brown, length fifty-six and a half inches.

LEADEN-TINTED BUSTARD.

This species is a native of the plains of South Africa. Its habits are those of the family generally. It is twenty inches in length; seventeen inches in height. Its general color is brown, varied with black and white.

OF THE TRUMPETERS.

THE bill is moderately long, having the upper mandible a little convex. The nostrils are oblong, sunk, and pervious. The tongue is cartilaginous, flat, and fringed at the tip. The legs are naked a little above the knees; and the toes are placed three before and one behind.

This singular tribe, of which only two species have yet been discovered stands arranged, even in Gmelin's edition of the Systema Naturæ, among the birds of the ensuing order, the *Waders;* but both in its formation and habits it differs so materially from the whole of that order, that I have not hesitated in placing it among the gallinaceous birds.

THE GOLD-BREASTED TRUMPETER,

THE GOLD-BREASTED TRUMPETER.

The length of this bird is about twenty-two inches; and its legs are five inches high, and completely covered with small scales, which reach two inches above the knee. Its general plumage is black: and the feathers of the head and neck are very short and downy; those of the fore part of the neck, and upper part of the breast, of a glossy gilded green, with a reflection of blue in some lights. The feathers between the shoulders are rust-colored, changing into a pale ash-color as they pass downward. They are loose and silky Those of the scapulars are long, and hang over the tail, which is very short, and consists of twelve blackish feathers. The legs are greenish; and the bill is yellowish green, having the nostrils pervious.

The most characteristic and remarkable property of the Gold-breasted Trumpeters consists in the singular noise which they often make either of their own accord, or when urged by their keepers. To induce one of the birds to this, it is sometimes necessary to entice it with a bit of bread to come near; and then, making the same kind of sound, which the keepers can well imitate, the bird will frequently be disposed to repeat it. The Gold-breasted Trumpeter, when tamed, distinguishes its master and benefactor with marks of affection.—"Having (says Vosmaër) reared one myself, I had an opportunity of experiencing this. When I opened its cage in the morning, the animal hopped round me, expanding his wings, and *trumpeting*, as if to wish me good morning. He showed equal attention when I went out and returned. No sooner did he perceive me at a distance, than he ran to meet me; and even when I happened to be in a boat, and set my foot on shore, he welcomed me with the same compliments, which he reserved for me alone, and never bestowed upon others.

The Trumpeter is easily tamed, and always becomes attached to its benefactor. When bred up in the house, it loads its master with caresses, and follows his motions; and, if it conceive a dislike to persons on account of their forbidding figure, or of injuries received, it will pursue them sometimes to a considerable distance, biting their legs, and testifying every mark of displeasure. It obeys the voice of its master, and even answers to the call of others to whom it bears no ill-will. It is fond of caresses, and offers its head and neck to be stroked; and if once accustomed to these familiarities, it becomes troublesome, and will not be satisfied without continual fondling. It makes its appearance as often as its master sits down to table, and begins by driving out the dogs and cats from the room; for it is so obstinate and bold, that it never yields, but, often, after a tough battle, will put even a middle-sized dog to flight. It avoids the bites of its antagonist by rising in the air; and retaliates with violent blows of its bill and claws, aimed chiefly at the eyes. After it gains the superiority, it pursues its victory with the utmost rancor, and if not taken off, will destroy the fugitive. By its intercourse with man, its instincts become moulded like those of dogs; and we are assured that it can be trained to attend a flock of sheep. It even shows a degree of jealousy of its human rivals; for when at table, it bites fiercely the naked legs of the negroes and other domestics who approach its master.

Nearly all these birds have a habit of following people through the streets, and out of town; even those whom they have never seen before. It is difficult to get rid of them; if a person enter a house, they will wait his return, and again join him, though after an interval of two or three hours. I have sometimes, (says M. de la Borde) betaken myself to my heels; but they ran faster, and always got before me; and when I stopped they stopped also. I know one that invariably follows all the strangers who enter its master's house, accompanies them into the garden, takes as many turns there as they do, and attends them back again.

In a state of nature this bird inhabits the arid mountains and upland forests of South America; never visiting the clear grounds, nor the settlements. It associates in numerous flocks. It walks and runs, rather than flies; for it never rises more than a few feet from the ground, and then only to reach some short distance, or to gain some low branch. It feeds on wild fruits; and, when surprised in its haunts, makes its escape by the swiftness of its feet, at the same time emitting a shrill cry not unlike that of a Turkey.

OF THE OSTRICHES IN GENERAL.

In the Ostriches, the bill is straight and depressed. The wings are small in proportion to the size of the body, and altogether useless for flight. The legs are naked above the knee: the number of toes, in one species is two, and in the remaining species three; and these are placed forwards.

THE BLACK, OR GREAT OSTRICH.

This Ostrich stands so high as to measure from seven to nine feet from the top of the head to the ground. From the back, however, it is seldom more than three or four feet, the rest of its height being made up by its extremely long neck. The head is small; and, as well as the greater part of the neck, is covered only with a few scattered hairs. The feathers of the body are black and loose; those of the wings and tail are of a snowy white, waved, and long, having here and there a tip of black. The wings are furnished with spurs. The thighs and flanks are naked; and the feet are strong, and of a gray-brown color.

THE GREAT OSTRICH.

The sandy and burning deserts of Africa and Asia, are the only native residences of the Black Ostriches. Here these birds are seen in flocks, so extensive as sometimes to have been mistaken for distant cavalry.

There are many circumstances in the economy of the Ostrich, which differ from those of the feathered race in general. This bird seems to form one of the links of union in the great chain of nature, connect-

ing the winged with the four-footed tribes. Its strong-jointed legs, and (if I may venture so to call them) cloven hoofs, are well adapted both for speed and defence. Its wings insufficient to raise it from the ground: its camel-shaped neck is covered with hair: its voice is a kind of hollow, mournful lowing: and it grazes on the plain with the Quagga and the Zebra.

Ostriches are frequently injurious to farmers in the interior of Southern Africa, by coming in flocks into their fields, and destroying the ears of wheat so effectually, that in a large tract of land they sometimes leave nothing but the mere straw behind. The body of the bird is not higher than the corn; and when it devours the ears, it bends down its long neck, so that at a little distance it cannot be seen; but on the least noise it rears its head, and generally contrives to escape before the farmer gets within gun-shot of it.

OSTRICH RIDDEN BY A NEGRO.

When the Ostrich runs, it has a proud and haughty appearance; and, even when in extreme distress, never appears in great haste, especially if the wind be with it. Its wings are frequently of material use in aiding its escape; for, when the wind blows in the direction that it is pursuing, it always flaps them. In this case the swiftest horse cannot overtake it: but if the weather be hot, and there be no wind, the difficulty of out-running it is not so great.

Ostriches are polygamous birds; one male being seen with two or three, and sometimes with five females. It has been commonly believed, that the female Ostrich, after depositing her eggs in the sand, and there covering them up, trusts them to be hatched by the heat of the climate, and leaves the young-ones to provide for themselves. Even the author of the book of Job alludes to this popular notion respecting

the Ostrich, " which leaveth her eggs in the earth, and warmeth them in the dust; and forgetteth that the foot may crush them, or that the wild beast may break them. She is hardened against her young-ones, as though they were not hers: her labor is in vain, without fear; because God has deprived her of wisdom, neither hath he imparted to her understanding." Recent travellers have, however, assured us that no bird has a stronger affection for her offspring than this, and that none watches her eggs with greater assiduty. It happens, probably, in those hot climates, that there is less necessity for the continual incubation of the female; and that she frequently leaves her eggs, which are in no danger of being chilled by the weather. But though she sometimes leaves them by day, she always carefully broods, over them by night; and Kolben, who saw great numbers of Ostriches at the Cape of Good Hope, affirms, that they sit on their eggs like other birds, and that the males and females take this office by turns, as he had frequent opportunities of observing. Nor is it more true that they forsake their young-ones as soon as they are excluded from the shell. On the contrary, these are not able to walk for several days after they are hatched. During this time the parents are very assiduous in supplying them with grass and water, and will encounter every danger in their defence. The females which are united to one male, deposit all their eggs in the same place, to the number of ten or twelve each: these they hatch altogether, the male also taking his turn of sitting on them. Between sixty and seventy eggs have sometimes been found in one nest. The time of incubation is six weeks.

GROUP OF OSTRICHES.

M. Le Vaillant informs us, that, in Africa, he started an Ostrich from its nest, where he found eleven eggs quite warm: he also found four others at a little distance. Those in the nest had young-ones in in them; but his attendants eagerly caught up the detached ones, assuring him that they were perfectly good to eat. They informed him, that near the nest there are always placed a certain number of eggs, which the birds do not sit upon, and which are designed for the first nourishment of the future young. "Experience, (says M. Le Vaillant) has convinced me of the truth of this observation; for I never afterwards met with an Ostrich's nest, without finding eggs disposed in this manner."

Some time after this, M. Le Vaillant found a female Ostrich on a nest containing thirty-two eggs; and twelve eggs were arranged at a little distance, each in a separate cavity formed for it. He remained near the place some time; and saw three other females come and alternately seat themselves in the nest; each sitting for about a quarter of an hour, and then giving place to another, who, while waiting, sat close by the side of her whom she was to succeed.

That Ostriches have a great affection for their offspring, may be inferred from the assertion of Professor Thunberg, that he once rode past the place where a hen Ostrich was sitting on her nest; when the bird sprang up and pursued him, evidently with a view to prevent his noticing her eggs or young. Every time he turned his horse towards her, she retreated ten or twelve paces; but as soon as he rode on again, she pursued him, till he had got to a considerable distance from the place where he had started her.

If the eggs of Ostriches be touched by any person in the absence of the parents, the birds not only desist from laying any more in the same place, but trample to pieces with their feet all those that have been left. The natives of Africa, therefore, are very careful in taking part of the eggs away, not to touch any of them with their hands, but always to push them out of the nest with a long stick.

In the interior of the eggs there are frequently discovered a number of small oval-shaped pebbles, about the size of a marrow-fat pea; of a pale yellow color, and exceedingly hard. Mr. Barrow states that he saw in one egg nine and in another twelve. These stones are sometimes set, and used for buttons.

This gentleman, states that the eggs of the Ostrich are considered a great delicacy. They are prepared as food in various ways: but the best way, he says, is to bury them in hot ashes; and, through a hole made in the upper end, to stir the contents round till they acquire the consistence of an omelet. Prepared in this manner he often found them an excellent repast, in his long journeys over the wilds of Africa. These eggs are easily preserved for a great length of time, even at sea; and without any of that trouble of constantly turning them, which is necessary with hen's eggs. This is owing entirely to the thickness and strength of the shells. At the Cape of Good Hope they are usually sold for about twelve cents each. From their large size, one of them is sufficient to serve two or three persons at a meal.

Thunberg saw necklaces and ornaments for the waist, that had been

made of the shells of the eggs, by grinding bits of them into the form of small rings.

The Ostrich itself is chiefly valuable for its plumage; and the Arabians have reduced the chase of it to a kind of science. They hunt it on horseback, and begin their pursuit by a gentle gallop; for, should they at the outset use the least rashness, the matchless speed of the game would immediately carry it out of their sight, and in a very short time beyond their reach. But when they proceed gradually, it makes no particular effort to escape. It does not go in a direct line, but runs first to one side and then to the other; this its pursuers take advantage of, and, by rushing directly onward, save much ground. In a few days, at most, the strength of the animal is exhausted; and it then either turns on the hunters and fights with the fury of despair, or hides its head, and tamely receives its fate.

Some persons breed Ostriches in flocks: for they may be tamed with very little trouble; and in their domestic state few animals may be rendered more useful. Besides the valuable feathers which they cast; the eggs which they lay; their skins, which are used by the Arabians as a substitute for leather; and their flesh, which many esteem as excellent food, they are sometimes made to serve the purpose of Horses.

In a tame state, it is pleasant to observe with what dexterity they play and frisk about. In the heat of the day, particularly, they will strut along the sunny side of a house with great majesty, perpetually fanning themselves with their expanded wings, and seeming at every turn to admire, and be enamored of, their own shadows. During most parts of the day, in hot climates, their wings are in a kind of vibrating or quivering motion, as if designed principally to assuage the heat.

They are tractable and familiar towards persons who are acquainted with them; but they are often fierce towards strangers, whom they sometimes attempt to push down, by running furiously upon them; and, on succeeding in this effort, they not only peck at the fallen foe with their bills, but strike at him violently with their feet. While thus engaged, the Ostriches sometimes make a fierce hissing noise, and have their throats inflated and their mouths open. At other times they make a kind of cackling noise, like some species of poultry: this they use when they have overcome or routed an adversary. During the night they often utter a doleful or hideous cry, somewhat resembling the distant roaring of a Lion, or the hoarse tone of a Bear or an Ox, as if they were in great agony.

They will swallow, with the utmost voracity, rags, leather, wood, iron, or stone, indiscriminately. "I saw one at Oran, (says Dr. Shaw,) that swallowed, without any seeming uneasiness or inconvenience, several leaden bullets, as they were thrown upon the floor, *scorching hot from the mould!*"

When Mr. Adanson was at Podar, a French factory on the southern branch of the river Niger, two young but nearly full-grown Ostriches belonging to the factory, afforded him a very amusing sight. They were so tame, that two little blacks mounted both together on the back of the largest. No sooner did he feel their weight, than he began to

run as fast as possible, and carried them several times round the village; as it was impossible to stop him otherwise than by obstructing the passage. This sight pleased Mr. Adanson so much, that he wished it to be repeated; and, to try their strength, he directed a full-grown negro to mount the smaller, and two others the larger of the birds. This burden did not seem at all disproportioned to their strength. At first they went at a tolerably sharp trot; but when they became heated a little, they expanded their wings, as though to catch the wind and moved with such fleetness that they scarcely seemed to touch the ground. Most people have seen a Partridge run, and consequently they must know that no man is able to keep up with it: and it is easy to imagine, that if the Partridge had a longer step, its speed would be considerably augmented. The Ostrich moves like the Partridge, with this advantage; and the two birds here spoken of would have distanced the fleetest race-horses that ever were bred. It is true, they would not have held out so long as a horse; but they would undoubtedly have been able to go over a given short space in less time.

THE CASSOWARY.

The body of the Cassowary is extremely heavy, and its wings are so short, that it has no power to raise itself from the ground in flight. The quills of which the wings are composed, are five in number; they are strong, distant from each other, and without barbs. They are, in short, so many spines; and are given to the animals as weapons of defence against its enemies. The beak is about five inches long, somewhat curved, and of a very hard substance. A bony protuberance covered with horn, and of a blackish brown color, forms on the top of the head a sort of helmet. The skin of the head and neck is entirely naked, and is of a fine blue color above and red below. On each side of the front of the neck, hangs a long light blue caruncle or wattle. The body is covered with black feathers, which at a little distance, have the appearance of hair. Those on the hinder part of the back are of such length, as entirely to conceal the tail. The thighs are each about eighteen inches long, and are covered with feathers almost to the knees. The legs are remarkably stout: the toes of each foot are only three in number, and the nail of each internal toe is about twice the length of any of the others.

Like the Ostrich, this bird is not very delicate in its taste. It will swallow almost any thing not too large to pass down its throat, that is presented to it. Some writers have asserted, that the Cassowary will occasionally swallow even burning coals. It is particularly fond of fruit, and of the eggs of poultry; but it is not able to eat any kind of grain, as the tongue is so formed as to have no power of guiding this down the throat.

A Cassowary now kept in the Menagerie of the museum at Paris, devours every day between three and four pounds weight of bread, six or seven apples, and a bunch of carrots. In summer, it drinks about four pints of water in the day; and in winter somewhat more.

It swallows all its food without bruising it. The bird is sometimes ill-tempered and mischievous; is much irritated when any person approaches it of a dirty or ragged appearance, or dressed in red clothes; and frequently attempts to strike at them by kicking forward with its feet. It has been known even to leap out of its enclosure, and to tear the legs of a man with its claws.

The Cassowary is a very vigorous and powerful bird. Its beak being in proportion, much stronger than that of the Ostrich, it has the means of defending itself with great advantage, and of easily pulling down and breaking in pieces almost any hard substance. It strikes, in a very dangerous manner with its feet, either behind or before, at any object which offends it.

In a wild state these birds lay three or four eggs at a time, and these are generally of a greenish or greyish color, beautifully spotted with grass green, and marked towards their smaller end with white. The female deposits them in the sand, and, after having covered them over, leaves them to be hatched by the heat of the sun and the atmosphere. In some countries, however, and under some circumstances, Cassowaries sit upon their eggs like other birds.

Cassowaries are found only in the south-eastern parts of Asia; that is, in the peninsula of India beyond the Ganges, and in the islands of the Indian Archipelago; but they are not very numerous in any of these places. The deep forests of the island of Ceram, along the southern coast from Ethiopia almost to Kelemori, contain, however, great numbers of them.

THE EMU.

The Emu is a native of New Holland, and nearly equals the Ostrich in bulk, its height being between five and six feet. Its feathers lie loosely on the body, and its wings are small and hardly to be distinguished. The skin of the Emu furnishes a bright and clear oil, on which account it is eagerly sought after. Mr. Bennet gives the following account of the habits of this bird:

THE EMU.

"In its manners the Emu bears a close resemblance to the Ostrich. Its food appears to be wholly vegetable, consisting chiefly of fruits, roots and herbage, and it is consequently, notwithstanding its great strength, perfect-

ly inoffensive. The length of its legs and the muscularity of its thighs enable it to run with great swiftness; and as it is exceedingly shy, it is not easily overtaken or brought within gun-shot. Captain Currie states that it affords excellent coursing, equalling, it not surpassing, the same sport with the hare in England; but Mr. Cunningham says that dogs will seldom attack it, both on account of some peculiar odour in its flesh which they dislike, and because the injuries inflicted upon them by striking out with its feet are frequently very severe. The settlers even assert that the Emu will break the small bone of a man's leg by this sort of kick; to avoid which, the well-trained dogs run up abreast, and make a sudden spring at their neck, whereby they are quickly dispatched.

THE EMU.

"Its flesh has been compared to coarse beef, which it resembles both in appearance and taste. There is but little fit for culinary use upon any part of the Emu except the hind quarters."

The voice of the Emu is a kind of low booming sound. The eggs are six or seven in number, of a dark green color, and are much esteemed by the natives as food. When the natives take an Emu, they break its wings, a curious custom of no perceptible utility. Young men and boys are not permitted to eat the flesh of this bird.

THE APTERYX.

This extraordinary bird, whose name is derived from the apparent absence of wings, those members being merely rudimentary, inhabits the islands of New Zealand. It conceals itself among the densest fern, and when hunted by dogs, it hastens to seek a refuge among rocks and in the chambers which it excavates in the earth. In these chambers its nest is made and the eggs laid. The natives hunt it with great eagerness, as the skin is used for the dresses of chiefs, who are so tenacious of them that they can hardly be persuaded to part with a single skin. The feathers are employed to make artificial flies. When attacked it defends itself by rapid and vigorous strokes with its powerful feet.

THE APTERYX.

Dr. Shaw first brought this bird before the notice of the public, but for many years naturalists considered it an extinct species. Latterly the question has been set at rest, not only by the researches of Gould and other naturalists, but by the arrival in England of several skins

and one living specimen, now in the Zoological Gardens. This bird has a singular habit of of resting with the tip of its bill placed on the ground. The nostrils of the Apteryx are placed almost at the very extremity of the bill. The aborigines of New Zealand give it the name of Kiwi Kiwi. The food of the bird consists of snails, insects and worms, which latter creatures it obtains by striking the ground with its feet, and seizing them on their appearance at the surface.

A small but well preserved skin is mounted in the Ashmolean Museum, Oxford, in which the rudimentary wings are very well shown. An entire skeleton is in the museum of the College of Surgeons, and other specimens are to be seen in various collections

THE DODO.

This singular bird, which is supposed to be extinct, was discovered at the Mauritius by the early voyagers. For many years their accounts of the Dodors were supposed to be mere flights of fancy. Lately, however, the discovery of several relics of this bird in various countries has set the question of its existence at rest, but not the question of the proper position of the bird. Some think it belongs to the Pigeons, and some to the ostriches. In the Ashmolean Museum at Oxford are a head and foot of the Dodo, sole remnants of a perfect specimen known to have existed in 1700; and in the same place, in the year 1847, during the meeting of the British Association, were gathered together the whole of the existing remains from every country.

THE DODO.

In the travels of Sir T.Hubert, in the year 1627, are several accounts. From the work of this traveller, whose amusement it was to re-write his travels, each time completely changing the language but retaining the matter, an extract is taken.

"The Dodo, a bird the Dutch call Walghvogel, or Dod Eersen; her body is round and fat, which occasions the slow pace, or that her corpulencie, and so great as few of them weigh less than fifty pound: meat it is with some, but better to the eye than stomach, such as only a strong appetite can vanquish. . . It is of a melancholy visage, as sensible of nature's injury in framing so massie a body to be directed by complimental wings, such, indeed, as are unable to hoise her from the ground, serving only to rank her among birds. Her traine, three small plumes, short and improportionable, her legs suiting to her body, her pounces sharpe, her appetite strong and greedy. Stones and iron are digested; which description will better be conceived in her representation." The "representation" here alluded to is that of a globular-shaped bird, perfectly naked, with the exception of three separate feathers on the tail, and a few feathers on the wing. The expression of lugubrious wisdom on the countenance is irresistibly ludicrous.

It is still within the range of possibility that this bird may again be

discovered, as at present but little of Madagascar has been searched, and in that island, if anywhere, it will be found.

Another bird, the gigantic Dinornis, has been extirpated from the face of the earth by man. This enormous bird, whose leg is rather larger than that of a fossil Elk, and whose head could not have been less than ten feet and a half from the ground, was at one time an inhabitant of New Zealand, but has been extirpated for many years, a fact likely to befal the defenceless Apteryx. In the Anatomical Museum at Oxford is a cast of a leg of the Dinornis, standing side by side with that of an Ostrich. The leg of the Ostrich is quite insignificant by the side of the enormous cast.

THE CARIAMA.

It is, perhaps, between the Screamers, the Trumpeter, and the Cranes, that we must place this remarkable bird, which inhabits the vast solitary mountain plains, surrounded by forests, which extend over so large a portion of Brazil, and where its loud sonorous voice breaks the silence of the desert. It runs with astonishing swiftness, trusting to its speed, and not its wings, for safety. Shy, recluse, and wary, the Cariama stalks along, on the watch against surprise; its eye instantly marks the distant intruder, and it prepares for flight: it flies badly, and rarely takes wing. Wild as this bird is in its natural condition, is easily domesticated, and will live sociably with the other tenants of the poultry yard.

THE CARIAMA.

WADERS.

OF THE HERON TRIBE IN GENERAL.

In the Waders (or *Grallæ* of Linnæus) the bill is somewhat cylindrical. The thighs are feathered only half-way to the knees; and the legs are longish, and formed for walking.

The characters of the tribe are: a long, strong, and sharp-pointed bill; linear nostrils, and pointed tongue: toes connected by a membrane as far as the first joint; and the middle claw, in some of the species, pectinated.

The different kinds of Herons are very numerous, amounting in the whole to nearly a hundred. They are found in various parts of the world, but chiefly in temperate and hot climates. Several of them are migratory. They have long feet and necks, and live almost wholly on amphibious animals and fishes.

THE COMMON CRANE.

This is a large bird, measuring upwards of five feet in length. The bill is more than four inches long. The plumage is, in general, ash-colored: but the forehead is black; and the sides of the head, behind the eyes, and the hind part of the neck, are white; on the upper part of the neck there is a bare ash-colored space of two inches; and, above this, the skin is naked and red, with a few scattered hairs. Some parts about the wings are blackish. Erom the pinion of each wing springs an elegant tuft of loose feathers, curled at the ends; which can be erected at will, but which in a quiescent state hangs over and covers the tail. The legs are black.

These birds are seen in numerous flocks in all the northern parts of Europe. We are told that they make their nests in marshes, and lay two bluish eggs. They feed on reptiles of all kinds, and on some species of vegetables; while corn is green, they are said to make such havoc in the fields as to ruin the farmers, where ever the flocks alight.

They are migratory; returning northward in the spring, (where they generally make choice of the places which they occupied during the preceding season,) and in the winter inhabiting the warmer regions of Egypt and India. They fly very high, and arrange themselves in the form of a triangle, the better to cleave the air. When the wind freshens, and threatens to break their ranks, they collect their force into a circle; and they adopt the same disposition when attacked by powerful birds of prey. Their migratory voyages are chiefly performed in the night; but their loud screams betray their course. During these nocturnal expeditions the leader frequently calls, in order to rally his forces, and to point out the track; and the

cry is repeated by the flock, each answering, to give notice that it follows and keeps its rank. The flight of the Crane is always supported uniformly, though it is marked by different inflections: and these variations have been observed to indicate a change of weather. The cries of these birds, during the day, forebode rain; and their noisy and tumultuous screams announce a storm. If, in a morning or evening, they rise upwards, and fly peacefully in a body, it is a sign of fine weather; but if they keep low, or alight on the ground, this menaces a tempest. The Crane seems to have considerable difficulty in commencing its flight. It runs a few steps; opens its wings; mounts a little way; and then having a clear space, it displays its vigorous and rapid pinions.

CRANE.

When the Cranes are assembled on the ground, they are said to set guards during the night; and the circumspection of these birds has even been consecrated in ancient hieroglyphics, as symbols of vigilance.

According to Kolben, Cranes are often observed in large flocks in the marshes about the Cape of Good Hope. He says, that he never saw a flock of them on the ground, which had not some birds placed apparently as sentinels, on watch while the others were feeding. These sentinels stand on one leg; and, at intervals, stretch out their necks, as if to observe that all is safe. When notice of danger is given, the whole flock rise on wing and fly away.

THE DEMOISELLE CRANE.

This bird is chiefly remarkable for the considerable idea that it appears to have respecting the beauty of its own person. Its deportment is very singular, and at times even ludicrous. Whenever it takes it into its head to be ridiculous, it does so most effectually, and

affectedly also. It moves about with a consequential air, hanging its head first on one side and then on the other. It then will run some twenty or thirty yards, treading only on the tips of its toes, as if it wore white satin shoes, and were trying to pick its way over a very dirty road. Then it will have a little dance all to itself, and suddenly stand still again quite grave and composed, as if it had been doing nothing at all. From these habits, cynical naturalists have named in the Demoiselle. It is rather a tall bird, being between three and four feet in height.

THE DEMOISELLE CRANE.

THE WHITE STORK.

The length of the White Stork is about three feet. The bill is nearly eight inches long, and of a fine red color. The plumage is wholly white; except the orbits of the eyes, which are bare and blackish: some of the feathers on the side of the back and on the wings are black. The skin, the legs, and the bare part of the thighs, are red.

WHITE STORK.

The White Storks are semi-domestic birds, haunting towns and cities; and, in many places, stalking unconcernedly about the streets, in search of offal and other food. They remove noxious filth, and clear the fields of serpents and reptiles. On this account they are protected in Holland, and are held in high veneration by the Mahomedans; and so greatly respected were they in times of old by the Thessalians, that to kill one of these birds was a crime expiable only by death.

Bellonious informs us that "Storks visit Egypt in such abundance, that the fields and meadows are white with them. Yet the Egyptians are not displeased with this sight; as Frogs are there generated in such numbers, that did not the Storks devour them, they would overrun every thing. They also catch and eat serpents. Between Belba and Gaza, the fields of Palestine are often rendered desert on account of the abundance of mice and rats; and, were these not destroyed, the inhabitants could have no harvest."

The disposition of the Stork is mild and placid. This bird is easily tamed; and may be trained to reside in gardens, which it will clear

of insects and reptiles. It has a grave air, and a mournful visage: yet, when roused by example, it exhibits a certain degree of gaiety; for it joins in the frolics of children, hopping about and playing with them: "In a garden (says Dr. Hermann) where the children were playing at hide-and-seek, I saw a tame Stork join the party; run its turn when touched; and distinguish the child whose turn it was to pursue the rest, so well, as, along with the others, to be on its guard."

To the Stork the ancients ascribed many of the moral virtues; as temperance, conjugal fidelity, and filial and paternal piety. The manners of this bird are such as were likely to attract peculiar attention. It bestows much time and care on the education of its offspring, and does not leave them till they have strength sufficient for their own support and defence. When they begin to flutter out of the nest, the mother bears them on her wings; she protects them from danger, and will some times perish rather than forsake them. A celebrated story is current in Holland, that, when the city of Delft was on fire, a female Stork in vain attempted several times to carry off her young-ones; and, finding she was unable to effect their escape, suffered herself to be burned with them.

The following anecdote affords a singular instance of sagacity in this bird:—"A wild Stork was brought by a farmer, who resided near Hamburgh, into his poultry-yard, to be the companion of a tame one that he had long kept there; but the tame Stork, disliking a rival, fell upon the poor stranger, and beat him so unmercifully that he was compelled to take wing, and with some difficulty escaped. About four months afterwards, however, he returned to the poultry-yard, recovered of his wounds, and attended by three other Storks, who no sooner alighted than they all together fell upon the tame Stork and killed him."

Storks are birds of passage, and observe great exactness in the time of their autumnal departure from Europe to more favorite climates. They pass a second summer in Egypt and the marshes of Barbary. In the former country they pair; again lay, and educate a second brood. Before each of their migrations, they rendezvous in amazing numbers. They are for a while much in motion among themselves; and after making several short excursions, as if to try their wings, they suddenly take flight with great silence.

These birds are seldom seen further north than Sweden; and, though they have scarcely ever been found in England, they are so common in Holland as to build on the tops of the houses, where even the inhabitants provide boxes for them to make their nests in. Storks are also common at Aleppo; and are found in great numbers at Seville, in Spain. At Bagdad, hundreds of their nests are seen about the houses, walls, and trees; and at Persepolis, in Persia, the remains of the pillars serve them for nesting places, "every pillar having a nest upon it."

During their migrations Storks are observed in vast flocks. Dr. Shaw saw three flights of them leaving Egypt, and passing over Mount Carmel, each half a mile in width: and he says they were three hours in passing over.

THE CHAJA.

The Chaja, or Crested Screamer, is about the size of a Heron: the bill is short, bent like that of a bird of prey, and of a yellowish brown: the irides are gold-colored; on the forehead, just above the bill, is a tuft of black feathers, variagated with ash-color; the head, neck, and body are grey, mixed with brown; the wings are furnished with spurs; the legs pretty long, of a dull yellow; the hind toe placed high up, so as not to touch the ground in walking. This species inhabit Brazil. It is said to feed on the same food as the Heron tribe; and the flesh is good.

THE COMMON HERON.

The Common Heron is about three feet three inches in length. The bill is six inches long, and of a dusky color. The feathers of the head are long, and form an elegant crest. The neck is white; and on the fore part is marked with a double row of black spots. The general color of the plumage is blue gray; with the greater wing-quills black. The middle of the back is almost bare, and covered by the loose feathers of the scapulars; the feathers of the neck hang loose over the breast. On each side, under the wing, the feathers are black. The legs are of a dirty green color, and the inner edge of the middle claw is serrated. The female has no crest, and the feathers on the breast are short.

THE COMMON HERON.

This is an extremely formidable enemy to the scaly tribes. There is, in fresh waters, scarcely a fish, however large, that the Heron will not strike at and wound, though unable to carry it off: but the smaller fry are his chief subsistence; these, pursued by their larger fellows of the deep, are compelled to take refuge in shallow waters, where they find the Heron a still more formidable enemy. His method is to wade as far as he can go into the water, and there patiently to await the approach of his prey; into which, when it comes within his sight, he darts his bill with inevitable aim. Willughby says he has seen a Heron that had in his stomach no fewer than seventeen Carp. Some gentlemen who kept tame Herons, were desirous of ascertaining what average quantity one of these birds

would devour. They consequently put several small Roach and Dace into a tub; and the Heron, one day with another, ate fifty in a day. Thus a single Heron is able to destroy nine thousand Carp in half a year.

The Heron, though he usually takes his prey by wading, frequently catches it while on wing; but this is only in shallow waters, where he is able to dart with more certainty than in the deeps; for in this case, though the fish, at the first sight of its enemy, descends, yet the Heron, with its long bill and legs, instantly pins it to the bottom, and thus seizes it securely. In this manner, after having been seen with its neck for above a minute under water, he will rise on wing with a Trout or an Eel struggling in his bill. The greedy bird, however, flies to the shore, swallows it, and returns to his fishing.

HERON.

Heron-hawking was formerly a favorite diversion; and a penalty of twenty shillings was incurred by any person taking the eggs of this bird. Its flesh was also in former times much esteemed, being valued at a rate equal with that of the Peacock.

In their breeding season the Herons unite together in large societies, and build in the highest trees. Sometimes as many as eighty nests have been seen in one tree. The nest is made of sticks, and lined with a few rushes and wool, or with feathers. The eggs are four or five in number, and of a pale-green color.

If taken young, these birds may be tamed; but the old birds, when captured, soon pine away, refusing every kind of nourishment.

The different parts of the body of the Heron are admirably adapted to its mode of life. This bird has long legs, for the purpose of wading; a long neck, answerable to these, to reach its prey in the water; and a wide throat to swallow it. Its toes are long, and armed with strong, hooked talons; one of which is serrated on the edge, the better to retain the fish. The bill is long and sharp, having towards the point serratures, which stand backward; these, after the prey is struck, act like the barbs of a fish-hook, in detaining it till the bird has time to seize it with its claws. Its broad, large, and concave wings, are of great use in enabling it to carry its load to the nest, which is sometimes at a great distance. Dr. Derham tells us, that he has seen lying scattered under the trees of a large heronry, fishes many inches in length, which must have been conveyed by the birds from the distance of several miles; and D' Acre Barret, Esq., the owner of this heronry, saw a large Eel that had been conveyed thither by one of them, notwithstanding the inconvenience that it must have experienced from the fish writhing and twisting about.

The body of the Heron is very small, and always lean; and the skin is said to be scarcely thicker than what is called goldbeater's skin. It is probable that this bird is capable of long abstinence; as its usual food, which consists of fish and reptiles, cannot at all times be had.

THE GREAT HERON.

The Great Heron of America, no where numerous, may be considered as a constant inhabitant of the Atlantic States, from New York to East Florida; in the storms of winter seeking out open springs, muddy marshes, subjected to the overflow of tides, or the sheltered recesses of the cedar and cypress swamps contiguous to the sea coast. As a rare or accidental visitor, it has been found even as far north as Hudson's Bay, and commonly passes the breeding season in small numbers along the coasts of all the New England States, and the adjoining parts of British America. Mr. Say also observed this species at Pembino, in the forty-ninth parallel. Ancient natural heronries of this species occur in the deep maritime swamps of North and South Carolina: similar associations for breeding exist also in the lower parts of New Jersey. Their favorite and long frequented resorts are usually dark and enswamped solitudes or boggy lakes, grown up with tall cedars, and entangled with an undergrowth of bushes and Kalmia laurels. These recesses defy the reclaiming hand of cultivation, and present the same gloomy and haggard landscape they did to the aborgines of the forest, who, if they existed, might still pursue through the tangled mazes of these dismal swamps, the retreating bear, and timorous deer. From the bosom of these choked lakes, and arising out of the dark and pitchy bog, may be seen large clumps of the tall Cypress (*Cupressus disticha*,) like the innumerable connecting columns of the shady mangrove, for sixty or more feet rising without a branch, and their spreading tops, blending together, form a canopy so dense as almost to exclude the light from beneath their branches. In the tops of the tallest of these trees, the wary

GREAT HERON.

Herons, associated to the number of ten or fifteen pairs, construct their nests, each one in the top of a single tree; these are large, formed of coarse sticks, and merely lined with smaller twigs. The eggs, generally four, are somewhat larger than those of the Hen, of a light greenish blue, and destitute of spots. The young are seen abroad about the middle of May, and become extremely fat and full grown before they make any effective attempts to fly. They raise but a single brood; and when disturbed at their eyries, fly over the spot, sometimes honking almost like a goose, and at others uttering a loud, hollow, and guttural grunt.

Fish is the principal food of the Great Heron, and for this purpose like an experienced angler, he often waits for that condition of the tide, which best suits his experience and instinct. At such times, they are seen slowly sailing out from their inland breeding haunts, during the most silent and cool period of the summer's day, selecting usually, such shallow inlets as the ebbing tide leaves bare, or accessible to his watchful and patient mode of prowling; here, wading to the knees, he stands motionless amidst the timorous fry, till some victim coming within the compass of his wily range, is as instantly seized by the powerful bill of the Heron, as if it were the balanced poniard of the assassin, or the unerring pounce of the Osprey. If large, the fish is beaten to death, and commonly swallowed with the head descending as if to avoid any obstacle arising from the reversion of the fins or any hard external processes. On land, our Heron has also his fare, as he is no less a successful angler than a mouser, and renders an important service to the farmer, in the destruction he makes among most of the reptiles and meadow shrews. Grasshoppers, other large insects, and particularly Dragon-flies, he is very expert at striking, and occasionally feeds upon the seeds of the pond lilies, contiguous to his usual haunts. Our species, in all probability, as well as the European Heron, at times, also preys upon young birds, which may be accidentally straggling near their solitary retreats. The foreign kind has been known to swallow young snipes, and other birds, when they happen to come conveniently within his reach.

THE QUA BIRD, OR AMERICAN NIGHT HERON.

The Great Night Heron of America, extends its migrations probably to the northern and eastern extremities of the United States, but is wholly unknown in the high boreal regions of the continent. In the winter it proceeds as far south as the tropics, having been seen in the marshes of Cayenne, and their breeding stations are known to extend from New Orleans to Massachusetts. They arrive in Pennsylvania early in the month of April, and soon take possession of their ancient nurseries, which are usually, (in the Middle and Southern States,) the most solitary and deeply shaded part of a cedar swamp, or some inundated and almost inaccesible grove of swamp oaks. In these places, or some contiguous part of the forest, near a pond or stream, the timorous and watchful flock pass away the day, until the

commencement of twilight, when the calls of hunger, and the coolness of evening arouse the dosing throng into life and activity. At this time, high in the air, the parent birds are seen sallying forth towards the neighboring marshes and strand of the sea, in quest of food, for themselves and their young; as they thus proceed in a marshalled rank, at intervals they utter a sort of recognition call, like the guttural sound of the syllable *'kwah*, uttered in so hollow and sepulchral a tone, as almost to resemble the retchings of a vomiting person. These venerable eyries of the Kwah Birds, have been occupied from the remotest period of time, by about eighty to a hundred pairs. When their ancient trees were levelled by the axe, they have been known to remove merely to some other quarter of the same swamp, and it is only when they have been long teased and plundered that they are ever known to abandon their ancient stations. Their greatest natural enemy is the Crow, and according to the relation of Wilson, one of these heronries, near Thompson's Point, on the banks of the Delaware, was at length entirely abandoned, through the persecution of these sable enemies. Several breeding haunts of the Kwah Birds occur among the red cedar groves, on the sea beach of Cape May; in these places they also admit the association of the Little Egret, the Green Bittern, and the Blue Heron. In a very secluded and marshy island, in Fresh Pond, near Boston, there likewise exists one of these ancient heronries; and though the birds have been frequently robbed of their eggs, in great numbers, by mischievous boys, they still lay again immediately after, and usually succeed in raising a sufficient brood. The nests, always in trees, are composed of twigs, slightly interlaced, more shallow and slovenly than those of the Crow, and though often one, sometimes as many as two or three nests are built in the same tree. The eggs about four, are as large as those of the common hen, and of a pale greenish blue color. The marsh is usually whitened by the excrements of these birds; and the fragments of broken egg shells, old nests, and small fish, which they have dropped while feeding their young, give a characteristic picture of the slovenly, indolent, and voracious character of the occupants of these eyries.

NIGHT HERON.

THE GREEN HERON.

The Green Bittern, known in many parts much better by a contemptible and disgusting name, is the most common and familiar species of the genus in the United States. Early in April, or as soon as the marshes are so far thawed as to afford them the means of subsistence, they arrive in Pennsylvania, and soon after are seen in New England, but are unknown in the remote and colder parts of Canada. Many winter in the swamps of the Southern States, though others retire in all probability to the warmer regions of the continent, as they are observed in that season in the large islands of Hayti and Jamaica.

GREEN HERON.

In common with other species, whose habits are principally nocturnal the Green Bittern seeks out the gloomy retreat of the woody swamp, the undrainable bog, and the sedgy marsh. He is also a common hermit, on the inundated, dark willow and alder shaded banks of sluggish streams, and brushy ponds, where he not only often associates with the kindred Kwah Birds and Great Herons, but frequently with the more petulant herd of chattering Blackbirds. When surprised or alarmed, he rises in a hurried manner, uttering a hollow guttural scream, and a *'k'w*, *'k'w*, *'k'w*, but does not fly far, being very sedentary and soon alighting on some stump or tree, looks round with an outstretched neck, and balancing himself for further retreat, frequently jets his tail. He sometimes flies high, with his neck reclining, and his legs extended, flapping his wings, and proceeding with considerable expedition. He is also the least shy, of all our species, as well as the most numerous and widely dispersed, being seen far inland, even on the banks of the Missouri, nearly to the river Platte, and frequently near all the maritime marshes, and near ponds, and streams in general. He is also particularly attracted by artificial ponds for fish, not refrain-

ing even to visit gardens and domestic premises, which any prospect of fare may offer. He is, at the same time, perhaps as much in quest of the natural enemy of the fish, the frog, as of the legitimate tenants of the pond. These bold and intrusive visits are commonly made early in the morning, or towards twilight, and he not unfrequently when pressed by hunger, or after ill success, turns out to hunt his fare by day, as well as dusk, and, at such times, collects various larvæ, particularly those of the Dragon-fly, with Grasshoppers, and different kinds of insects. At other times he preys upon small fish, Crabs and Frogs, for which he often lies patiently in wait till they reappear from their hiding places in the water or mud, and on being transfixed and caught, which is effected with great dexterity, they are commonly beaten to death, if large, and afterwards swallowed at leisure.

THE BOAT-BILL.

This genus of the family *Arcl̈eidal* (Heron-like birds,) would approach quite closely, as Cuvier observes, to the Herons, in regard to their bill and the kind of food which it indicates, were it not for the extraordinary form of that organ, which is nevertheless, when closely observed the bill of a Heron or a Bittern, very much flattened out. This bill is of an oval form, longer than the head, very much depressed, and not unlike the bowls of two spoons placed one upon another, with the rims in contact. The common Boat-bill is about the size of a domestic hen. In the male the forehead and upper parts of the neck and breast, are dirty white; the back and lower part of the belly rusty-reddish; the bill is black, and the legs and feet are brown. From the head depends a long crest of black feathers, falling backwards. The female

BOAT-BILL.

has the top of the head black, without the elongated crest; the back and the belly rusty-reddish; the wings grey; the forehead and rest of the plumage white; and the bill, legs, and feet brown.

THE GIGANTIC CRANE.

This is a large species, measuring from tip to tip of the wings nearly fifteen feet. The bill is of vast size, somewhat triangular, and sixteen inches round at the base. The head and neck are naked, except a few straggling curled hairs. The feathers of the back and wings are of a bluish ash-color, and very stout: those of the breast are long. The craw hangs down the fore part of the neck like a pouch. The belly is covered with a dirty-white down; and the upper part of the back and shoulders is surrounded with the same. The legs and half the thighs are naked; and the naked parts are nearly three feet in length.

GIGANTIC CRANE.

The Gigantic Crane, sometimes called the Adjutant, is an inhabitant of Bengal and Calcutta, and is sometimes found on the coast of Guinea. It arrives in the interior parts of Bengal before the period of rains, and retires as soon as the dry season commences. Its aspect is filthy and disgusting; yet it is an extremely useful bird, in consequence of the snakes, noxious reptiles, and insects which it devours. It seems to finish the work that is begun by the jackal and vulture: these clear away the flesh of animals, and the Gigantic Cranes remove the bones by swallowing them entire. They sometimes feed on fish; and one of them will devour as much as would serve four men to dinner. On opening the body of a Gigantic Crane, there were found in its craw a land tortoise, ten inches

GIGANTIC CRANE, OR ADJUTANT.

long, and in its stomach a large black cat. Being altogether undaunted at the sight of mankind, these birds are soon rendered familiar; and when fish or other food are thrown to them they catch them very nimbly, and immediately swallow them.

The Indians believe that these Cranes are invulnerable, and that they are animated by the souls of the Brahmins. They are held in the highest veneration both by the Indians and Africans. Mr. Ives, in attempting to kill some of them with his gun, missed his shot several times; this the bystanders observed with great satisfaction, telling him triumphantly that he might shoot at them as long as he pleased, but that he would never be able to kill any of them.

There seems no doubt that this is the species mentioned by Mr. Smeathman, as having been seen by him in Africa. The birds that he describes were at least seven feet high, and appeared at a distance not unlike *grey-headed men.* On the middle of the neck before, there was a long conic membrane, like a bladder, covered sparingly with short down, and rising or falling as the animals moved their beaks, but always appearing inflated.

ADJUTANT KILLING A SNAKE.

These birds are found in companies; and, when seen at a distance, near the mouths of rivers, coming towards an observer, (which they do with their wings extended,) they may be mistaken for canoes on the surface of a smooth sea; and when stalking about on the sand-banks, they appear like men and women picking up shell-fish on the beach.

A young bird of this kind, about five feet in height, was brought up tame, and presented to the Chief of the Bananas, where Mr. Smeathman lived; and in whose house it soon became perfectly familiar. It regularly attended the hall at dinner-time; and placed

itself behind its master's chair, frequently before any of the guests entered. The servants were obliged to watch it carefully, and to defend the provisions by beating it off with sticks; yet, notwithstanding every precaution, it would frequently snatch off something from the table. It one day purloined a whole boiled fowl, which it swallowed in an instant. This bird used to fly about the island, and roost very high among the silk-cotton trees; from this station, at the distance of two or three miles, it could see when the dinner was carried across the court. As soon as this appeared it would dart down, and arrive early enough to enter with some of those who carried in the dishes.

When sitting, it was observed always to rest itself on the whole length of the hind part of the leg. It sometimes stopped in the room for half an hour after dinner; turning its head alternately, as if listening to the conversation. The courage of this bird was not equal to its voracity: for a child eight or ten years of age was able to put it to flight; though it would seem at first to stand on the defensive, by threatening with its enormous bill widely extended, and crying out with a loud, hoarse voice.

It preyed on small quadrupeds, birds, and reptiles; and though it would destroy poultry, it never dared openly to attack a hen with her young-ones. It had been known to swallow a Cat whole; and a bone of a shin of beef being broken, served it but for two morsels.

THE BITTERN.

The Bittern is not so large as the Common Heron. Its bill also is weaker, and not more than four inches long. The gape, however, is so wide, that the eyes seem placed in the bill. The crown of the head is black; the feathers on the hind part forming a sort of pendent crest. The plumage is of a pale dull yellow, variously marked with black. Some parts about the wings are of a bright rust color, barred with black. The tail is very short; and the feathers on the breast are long and loose. The legs are of a pale green color; the claws long and slender; and the inside of the middle claw is serrated, for the better holding of its prey.

This is a very retired bird; dwelling among the reeds and rushes of extensive marshes, where it leads a solitary life, hid equally from the hunter whom it dreads, and the prey that it watches. It continues for whole days about the same spot, and seems to look for safety only in privacy and inaction.

In the autumn it changes its abode, always commencing its journey or change of place at sunset. Its precautions for concealment and security seem directed with great care and circumspection. It usually sits in the reeds with its head erect; by which from its great length of neck, it sees over their tops, without being itself perceived by the sportsman.

The principal food of the Bittern, during summer, consists of fish and frogs; but in the autumn these birds resort to the woods in pur-

suit of mice, which they seize with great dexterity, and always swallow whole. About this season they usually become very fat.

The Bittern is not so stupid a bird as the Heron, but it is greatly more ferocious. When caught, it exhibits much rancor, and strikes chiefly at the eyes of its antogonist. Few birds make so cool a defence: it is never itself the aggressor; but, if attacked, it fights with the greatest intrepidity. If darted on by a bird of prey, it does not attempt to escape; but, with its sharp beak erected, receives the shock on the point, and thus compels its enemy to retreat, sometimes with a fatal wound.

BITTERN.

When wounded by the sportsman, it often makes a severe resistance. It does not retire; but waits his onset, and gives such vigorous pushes with its bill, as to wound the leg even through the boot. Sometimes it turns on its back, like the rapacious birds, and fights both with its bill and claws. When surprised by a dog, it is said always to throw itself into this posture. Mr. Markwick once shot a Bittern in frosty weather; it fell on the ice, which was just strong enough to support the dogs, and they immediately rushed forward to attack it; but being only wounded, it defended itself so vigorously, that the dogs were compelled to leave it, till it was fired at a second time and killed.

During the months of February and March, the males make a kind of deep lowing noise in the mornings and evenings. This is supposed to be the call to the females, and to be produced by a loose membrane, situated at the entrance of the throat, capable of great extension. The noise was formerly believed to be made while the bird plunged its bill into the mud; hence Thompson:

> ————so that scarce
> The Bittern knows his time, with bill engulf'd
> To shake the sounding marsh.

The nest of the Bittern is formed in April, among rushes; and almost close to the water. The female lays four or five greenish eggs

and sits on them for about twenty-five days. The young-ones, when hatched, are naked and ugly, appearing almost all legs and neck; they do not venture abroad till about twenty days after their extrusion. During this time, the parents feed them with snails, small fish, or frogs. It is said that the hawks, which plunder the nests of most of the marsh-birds, seldom dare to attack those of the Bittern, on account of the old ones being always on their guard to defend their offspring.

A female Bittern, which was killed during the frost in winter, was found to have in her stomach several warty lizards, quite perfect, and the remains of some toads and frogs. These were supposed to have been taken out of the mud, under shallow water, in the swamp where the bird was shot.

TIGER BITTERN.

There is a species of Bittern, found in Guiana, called the Tiger Bittern. It is about thirty inches long, and of a darker color than the common Bittern, which it resembles in appearance and voice. It frequents the banks of rivers and marshy places, and builds its nest upon the ground.

TIGER BITTERN.

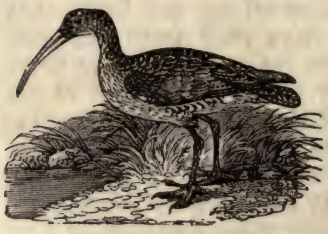
OF THE SNIPE TRIBE IN GENERAL.

In this tribe the bill is long, slender, weak, and straight. The nostrils are linear, and lodged in a furrow. The head is entirely covered with feathers. The feet have each four toes; the hind one of which is very short, and consists of several joints.

THE CURLEW.

These birds differ much in size; some of them weighing thirty seven, and others not twenty-two ounces. The head, neck, and coverts

of the wings are of a pale brown color, and the middle of each feather is black. The breast and belly are white, marked with narrow oblong black lines. The back is white, spotted with a few black strokes. The quill-feathers are black, but the inner webs are spotted with white. The tail is white, tinged with red, and beautifully barred with black. The legs are long, strong and of a bluish gray color.



CURLEW.

Large flocks of Curlews are frequently seen, in the winter season, on the sea-coasts, running about upon the sands, and feeding on shell-fish, crabs, and marine insects: they are also found in marshes, where they subsist on small frogs, snails, insects, and worms. Their bill is so long, weak, and slender, that it is calculated only for digging into soft mud or earth, in search of prey.

Both the English and French names of this bird are evidently derived from its cry.

In summer-time the Curlews retire to mountainous and unfrequented parts of the country, where they pair and breed. The eggs, which are four in number, are of a pale color, marked with irregular but distinct spots of brown.

Their flesh, as food, varies much in quality, according to the season and the place in which the birds have fed. Those that are shot on the moors, are always better than such as are killed on the sea-coasts or in the marshes.

THE LONG-BILLED CURLEW.

The Long-Billed Curlew is seen in the marshes of New Jersey, about the middle of May, on its way further north: and in September, or the latter end of August, on their return from their breeding places. Their southern migrations, in all probability, are bounded by the shores of the Mexican Gulf. Like most species of the genus, they retire into the desolate regions of the north to breed. According to Wilson, a few instances have been known, of one or two pairs remaining in the salt marshes of Cape May the whole summer; and they were believed to nest there on the ground, laying four eggs in size and color much resembling those of the Clapper Rail. Indeed, it will probably be found, that many birds, now supposed to pass the period of reproduction, in the remote regions of the north, only separate into solitary pairs, and disperse themselves through the vast wilds of the interior of North America.

The Long-Billed Curlews fly high and rapid, generally throwing themselves, when in company, into an angular wedge, after the manner of Wild Geese; uttering, as they fly, and when at all alarmed, a loud, short, whistling, and almost barking note, sometimes, as in other species of the family, strongly resembling the sibilation of the

word *kurlew*, and from whence they derive their characteristic name, adopted into so many of the European languages. By a dexterous imitation of this note, a whole flock may sometimes be enticed within gun shot; while the cries of the wounded continue the sympathetic enticement, until the fowler, repeating his shots, carries havoc among the quailing throng. Their food consists principally of insects, worms, and small Crabs. The young and old, also, on their arrival from the north, where they feed on various kinds of berries, still continue their fondness for this kind of food, and now frequent the uplands and pastures in quest of the fruit of the bramble, particularly dew-berries, on which they get so remarkably fat, at times, as to burst the skin in falling to the ground, and are then very superior in flavor to almost any other game bird of the season.

LONG-BILLED CURLEW.

THE GODWIT.

The Godwit belongs to a division of the Linnæan genus *Scolopax*, equally extensive with the Curlews, and containing more British species. It is only sixteen inches long, being smaller than the Curlew. It seldom remains more than a day in one place. On a fine moonlight night they may often be seen passing from one place to another, flying at a great height in the air. Although they are fond of marshy places, they do not locate far inland, but seem to prefer the neighborhood of the sea-coast even in summer.

THE PURRE.

The Purre belongs to the family of Sandpipers, of which there are about seventeen British species, the Purre being one of the most common. They are equally shy with the Curlews, and when alarmed give a kind of scream, and immediately skim off along the surface

of the water in an undulating flight, making a series of semicircles as they alternately approach and recede from the shore. When this alarm has subsided, they alight on a rock at some distance from the place they formerly occupied, and then descend to the shore, to resume their interrupted meal. They are found in great numbers on the coasts of Devon and Arnwall.

WOODCOCKS.

In this tribe of birds, the bill is nearly similar with that of the Snipe, but more robust, with the extremity attenuated and not depressed; the under mandible is also deeply grooved beneath. The eyes are placed very far back in the head, which last is rather quadrate than round. Legs robust, short, and wholly feathered to the knees, tarsus shorter than the middle toe; the toes cleft from the very base, and the hind nail truncated, and not projecting over the toe. The first or fourth primary longest. Tail of twelve feathers.

WOODCOCK.

The female larger, and the young similar with the adult. The plumage undergoes no change with the moult; its general colors are a mixture, often intimate, of black, rufous and cinerous.

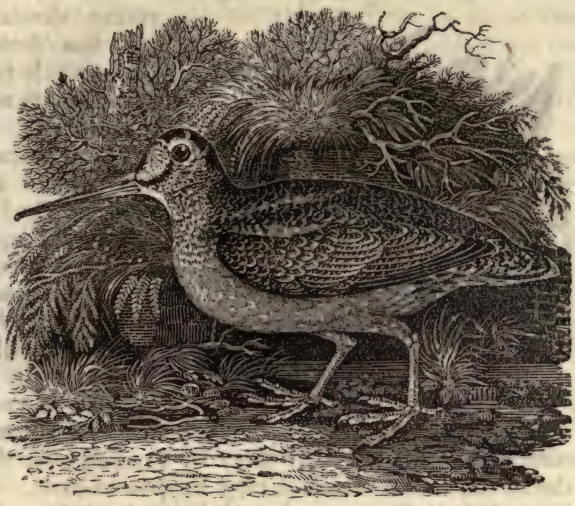
These are solitary birds, or only associating by pairs or families in the breeding season. They dwell habitually in forests both in the plains and mountains, and frequent shady swamps and thickets; but seldom appear in open grounds. From the greater strength of their less sensitive bills, they are enabled to bore in drier ground than the Snipes, and use this organ often in turning over the fallen leaves and withered grass, in quest of their insect prey. They tend their young with great assiduity, conveying them from danger even by sometimes carrying them on their backs, or in their claws. Their flight is low and direct, accompanied by a whizzing sound, from the labor attending upon it. Although there are but two species known, in either continent, yet they are spread over the whole earth.

THE LESSER WOODCOCK.

The American Woodcock, like the Snipe, appears again to be a near representative of that in Europe, whose manners and habits it almost entirely possesses, differing however, materially in the temperature of the climates selected for its residence, confining itself in the summer to the south side of the St. Lawrence, breeding in all the intermediate space as far as the limits of the Middle States, and retiring in winter, for the most part, either to or beyond the boundray of the Union.

Early in March the American Woodcock revisits Pennsylvania,

and soon after the New England or Eastern States. Acording to their usual habits, they keep secluded in the woods and thickets, till the approach of evening, when they sally forth to seek out springs, paths, and broken soil, in quest of worms and other insects, on which they feed. They now disperse themselves over the country to breed, and indicate their presence in all directions by the marks of their boring bills, which are seen in such soft and boggy places as are usually sheltered by thickets and woods.



LESSER WOODCOCK.

When flushed or surprised in their hiding places, they only rise in a hurried manner to the tops of the bushes, or glide through the under-growth to a short distance, when they instantly drop down again, and run out for some space on touching the ground, lurking as soon as they imagine themselves in a safe retreat. At times, in open woods, they fly out straight with considerable vigor and swiftness, but the effort, from the shortness of the wing, is always attended with much muscular exertion.

Early in April, the Woodcocks in pairs select a spot for breeding, which is generally in or near some retired part of the same woods which usually affords them their food and shelter. The nest is placed on the ground, in a tuft of grass, or in the protection of some old stump. It is formed with little art, of such withered leaves and old grass as the convenience of the place affords; the eggs are four, rather large, of a dark yellowish-white approaching olive, speckled and confluently blotched with three slightly different shades of dark yellowish-brown spots, most numerous at the greater end.

THE SNIPE.

With the bill long, straight, slender and compressed, soft and flexible. Wings moderate, the first and second primaries nearly of equal length, and longest in the wing. Tail short and rounded, of from twelve to sixteen or more feathers. The head large, compressed, low in front and high behind; the eyes large, placed high and far back in the head, so as to give a stupid appearance to the bird, for which it is indeed characteristic. The tongue long, filiform and

acute. The body compressed and very fleshy. The sexes, with the young, similar in their plumage, but the female a little larger. They moult twice in the year, and the tints are a little more brilliant in summer.

SNIPE.

These birds, nearly nocturnal in their habits and time of feeding, live usually in woods, or in bogs and marshes, and feed on worms insects and other small animals, which they seek in mud or bog-moss by probing down with the sensitive bill, whose extremity possesses, in consequence of its peculiar nervous netting, all the appropriate sense of touch; when this resource fails, and also in common, they seek their prey by turning over the decayed leaves of the forest, under which it may happen to lurk. When pursued they keep close to the ground, and have the infatuation to think that by hiding their head in their feathers, they are concealed from their enemies; when close chased, or suddenly flushed, they start on wing and fly out with great rapidity. The flesh is considered superior to almost any other game.—The species, composed of two or more sub-genera, are spread all over the world, but they generally prefer cold countries for their residence, in which, if temperate, they are often resident the whole year, in other climates they are necessarily migratory from the nature of their food. They nest on the ground; and the eggs are about four.

THE BROWN, OR RED-BREASTED SNIPE.

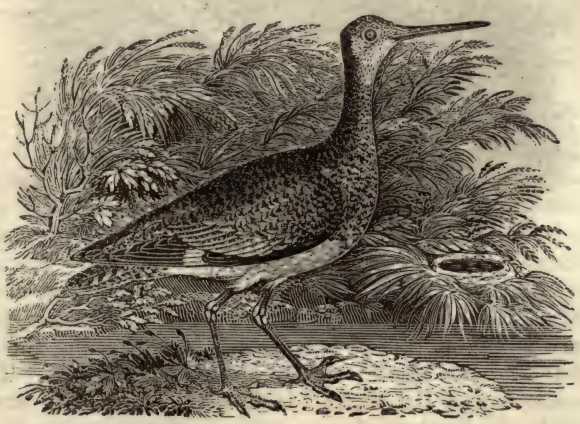
The Red-Breasted Snipe begins to visit the sea coast of New Jersey early in April, arriving from its winter quarters probably in tropical America. After spending about a month on the muddy marshes, and sand flats, left bare by the recess of the tides, a more powerful impulse than that of hunger impels the wandering flocks towards their natal regions in the north, where secluded, from the prying eye of man, and relieved from molestation, they pass the period of reproduction, the wide range of which continues, without interruption, from the borders of Lake Superior to the shores of the Arctic Sea.

The Red-Breasted Snipes are always seen associated in flocks, and though many are bred in the interior around the great northern lakes, they now all assemble towards the sea coast, as a region that affords them an inexhaustible supply of their favorite food of insects, mollusca, and small shell-fish; and here they continue, a succession of wandering and needy bands, until the commencement of cold weather advertises them of the approach of famine; when, by degrees, they recede beyond the southern limits of the Union. While here, they

appear very lively, performing their aerial evolutions over the marshes, sometimes at a great height in the air, uttering at the same time a loud, shrill and quivering whistle, scarcely distinguishable from that of the Yellow Legged Tatler, (something like *'te-te-te, 'te-te-te.*) The same loud and querulous whistling is also made as they rise from the ground, when they usually make a number of circuitous turns in the air, before they descend. At all times gregarious, in the autumn and spring they sometimes settle so close together, that several dozens have been killed at a single shot. While feeding on the shores or sand-bars, they may be sometimes advantageously approached by a boat, of which, very naturally, they have but little fear or suspicion, nor are they at any time so shy as the common Snipe, alighting often within a few rods of the place where their companions have been shot, without exhibiting alarm until harassed by successive firing.

SEMI-PALMATED SNIPE, OR WILLET.

The Willet, as this well known and large species is called, inhabits almost every part of the United States, from the coast of Florida to the distant shores and saline lakes in the vicinity of the Saskatchewan up to the 56th parallel of latitude, where, as they pass the summer, they no doubt propagate there, as well as in the Middle States of the Union. Their appearance in the north of Europe, is merely accidental, like the visit of the Ruff in America, which has, indeed, no better claim in our Fauna, than that of the Willet in Europe, both being stragglers from their native abodes and ordinary migrating circuits. From the scarcity of this species on the shores of Massachusetts Bay, it is more than probable, that their northern migrations are made chiefly up the great valley of the Mississippi; and they have been seen, in the spring, by Mr. Say, near Engineer Cantonment, on the bank of the Missouri. A few straggling families or flocks of the young, are occasionally seen, about the middle of August, on the muddy flats of Cohasset beach; but they never breed in this part of New England, though nests are found in the vicinity of New Bedford.



SEMI-PALMATED SNIPE, OR WILLET.

The Willet probably passes the winter within the tropics, or along

the extensive shores of the Mexican Gulf. About the middle of March, however, their lively vociferations of *pill-will-willet, pill-will-willet*, begin commonly to be heard in all the marshes of the sea islands of Georgia and South Carolina. In the Middle States they arrive about the 15th of April, or sometimes later, according to the season; and from that period to the close of July, their loud and shrill cries, audible for half a mile, are heard incessantly throughout the marshes where they now reside.

OF THE SANDPIPERS IN GENERAL.

THE Sandpipers have a straight and slender bill, about an inch and a half long; small nostrils; and a slender tongue. The toes are divided, or are very slightly connected at the base by a membrane: the hinder toe is short and weak.

THE RUFF AND REEVE.

The Ruff is about a foot in length, with a bill about an inch long. The face is covered with yellow pimples. A few of the feathers of the Ruff stand up over each eye, and appear not unlike ears. The colors of the Ruffs are in no two birds alike: in general they are brownish, and barred with black; though some have been seen that were altogether white. The lower parts of the belly and the tail coverts are white. The tail is tolerably long, having the four middle feathers barred with black; the others are pale brown. The legs are of a dull yellow, and the claws black. The female is smaller than the male and of a brown color.

THE RUFF.

The name of *Ruff* has been given to the male of this species, from the long feathers which stand out on the back part of the head and neck, and which remind a casual observer of the ruffs that were

worn by our ancestors. The female, which is called the *Reeve*, is destitute of this singular appendage.

The male bird does not acquire his ruff till the second season; and till that time he is in this respect like the female; as he is also annually from the end of June until the pairing season. After the time of incubation, the long feathers fall off, and the caruncles shrink in under the skin, so as not to be discerned.

The males are much more numerous than the females, and they have many severe contentions for their mates. The male chooses, near a splash of water, on some dry bank, a stand, round which he runs so often, as to make a bare circular path: the moment a female comes in sight, all the males within a certain distance commence a general battle; placing their bills to the ground, spreading the feathers of their neck, and using the same action as a Cock: and this opportunity is seized by the fowlers, who, in the confusion catch them, by means of nets, in great numbers.

An erroneous opinion prevails very generally, that Ruffs when in confinement must be fed in the dark, lest the admission of light should induce them to fight. The fact is, that every bird, even when kept in a room, takes its stand, as it would in the open air; and if another invade its circle a battle ensues. A whole room full of them may be set into fierce contest by compelling them to shift their stations; but, after the disturber has quitted the place, they have been observed to resume their circles, and become again pacific. In confinement, their quarrels usually originate in the pan containing their food not being sufficiently large enough to admit the whole party to feed, without touching each other. When the food has been divided into several pans, the birds have continued perfectly quiet.

The Reeves lay four eggs in a tuft of grass, about the beginning of May; and the young-ones are hatched in about a month. It is not known with certainty in what countries these birds pass the winter.

THE TURNSTONE.

The Turnstone is about the size of a Thrush; its bill is black, about an inch in length, and a little turned up at the end. The body is black, variously marked with white and rust-color on the upper parts; the breast and belly are white. The legs are short and orange-colored.

This bird is found on various parts of the English and Scottish coasts, and in North America. It has its name from its custom of turning over stones, in order to prey upon the insects and worms concealed beneath them.

When Mr. Catesby was on his voyage to North America, one of these birds, about forty leagues from the coast of Florida, flew on board the vessel. It was put into a cage, and showed much activity in turning up stones that were put to it; but not finding under them its proper food it soon died. In this action it was observed to move

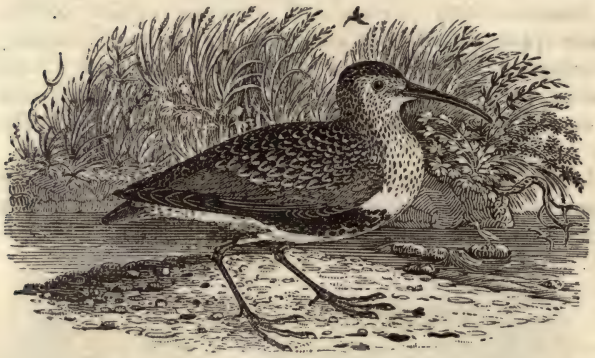
only the upper mandible of its bill, yet it was able, with great dexterity and quickness, to turn over stones of three pounds weight.

TURNSTONE.

The Turnstone makes its nest in the sand, and lays three or four olive-colored eggs, spotted with black. At the time of hatching, it has so much courage, as to attack both men and Dogs when they approach its nest.

DUNLIN, OR OX-BIRD.

The Dunlin or Red-backed Sandpiper of the United States, according to the season of the year, is met with throughout the northern hemisphere; penetrating, in America, during the summer season, to the utmost habitable verge of the Arctic circle, and even breeding in that remotest of lands, the ever wintry shores of Melville Peninsula. They likewise inhabit Greenland, Iceland, Scandinavia, the Alps of Siberia, and the coasts of the Caspian. In the southern hemisphere, they sometimes even wander as far as the Cape of Good Hope; and are found in Jamaica, other of the West India Islands, and Cayenne. In the autumn they are seen around Vera Cruz, and with other Sandpipers probably, exposed for sale in the market of Mexico. At the same time, many, as the Purres in their winter dress, remain through the greatest part of the winter within the milder limits of the Union; frequenting, at times, in great numbers, the coasts of both Carolinas during the month of February; flitting, probably, to and fro with every vaccillating change of temperature, being naturally vagabond, and nowhere fixed for any considerable time, until their arrival at the



DUNLIN.

ultima thule of the continent, where they barely stay long enough to rear a single brood, destined, as soon as they are able, to wander with the rest, and swell the aërial host, whose sole delight, like the untiring Petrels of the storm, or the ambitious Albatross, is to be in perpetual action; and are thus, by their associated numbers, obliged perpetually to rove in quest of their transient, periodical, and varying prey.

In the middle States, the Dunlins arrive on their way to the north, in April and May; and in September and October, they are again seen pursuing the route to their hybernal retreat in the south. At these times they often mingle with the flocks of other strand birds, from which they are distinguishable by the rufous color of their upper plumage. They frequent the muddy flats and shores of the salt marshes, at the recess of the tide, feeding on the worms, insects and minute shell-fish which such places generally afford. They are also very nimble on the strand, frequenting the sandy beaches which bound the ocean, running and gleaning up their prey with great activity, on the reflux of the waves.

WILSON'S SANDPIPER.

This small, and nearly resident species, may be considered as the most common and abundant in America, inhabiting the shores and marshes of the whole continent, both to the north and south of the equator; retiring probably, with the inclemency of the season, indifferently, from either frigid circle, towards the warmer and more hospitable regions within the tropics. They are consequently seen, spring and autumn, in all the markets of the Union, as well as in those of the West Indies, Vera Cruz, and in the interior as far as Mexico. Captain Cook also found them on the opposite side of the continent, frequenting the shores of Nootka Sound. The great mass of their pigmy host retire to breed within the desolate lands of the Arctic circle, where, about the 20th of May, or as soon as the snow begins to melt, and the rigors of the long and nocturnal winter relax, they are again seen to return to the shores and swampy borders of their native lakes, in the inclement parallel of 66°. Though shy and quailing on their first arrival, with many other aërial passengers of like habits, they contribute to give an air of life and activity, to these most dreary, otherwise desolate, and inhospitable regions of the earth. Endowed

WILSON'S SANDPIPER.

with different wants and predilections from the preceding hosts, whose general livery they wear, they never seemingly diverge in their passage so far to the eastward as to visit Greenland, and the contiguous extremity of northern Europe, being unknown in the other continent; and migrating always towards the south, they have thickly peopled almost every part of the country that gave them birth.

The Peeps as they are here called, are seen in the salt marshes around Boston, as early as the 8th of July; indeed, so seldom are they absent from us in the summer season, that they might be taken for denizens of the State, or the neighboring countries, did we not know that they repair, at an early period of the spring, to their breeding resorts in the distant north; and that, as yet, numerous and familiar as they are, the nest, and history of their incubation, is wholly unknown.

When they arrive, now and then accompanied by the semipalmated species, the air is sometimes, as it were, clouded with their flocks. Companies led from place to place, in quest of food, are seen whirling suddenly in circles, with a desultory flight, at a distance resembling a swarm of hiving Bees, seeking out some object on which to settle. At this time, deceiving them by an imitation of their sharp and querulous whistle, the fowler approaches, and adds destruction to the confusion of their timorous and restless flight. Flocking together for common security, the fall of their companions, and their plaintive cry, excites so much sympathy among the harmless Peeps, that, forgeting their own safety, or not well perceiving the cause of the fatality, which the gun spreads among them, they fall sometimes into such a state of confusion, as to be routed with but little effort, until the greedy sportsman is glutted with his timorous and infatuated game. When much disturbed, they however, separate into small and wandering parties, where they are now seen gleaning their fare of larvæ, worms, minute shell-fish, and insects in the salt marshes, or on the muddy and sedgy shores of tide rivers and ponds. At such times they may be very nearly approached, betraying rather a heedless familiarity, than a timorous mistrust of their most wily enemy; and even when rudely startled, they will often return to the same place in the next instant, to pursue their lowly occupation of scooping in the mud, and hence probably originated the contemptible appellation of *humility*, by which they and some other small birds of similar habits have been distinguished. For the discovery of their food, their flexible and sensitive awl-like bills are probed into the mire, marshy soil, or wet sand, in the manner of the Snipe and Woodcock, and in this way they discover and rout from their hidden retreats, the larvæ and soft worms which form a principal part of their fare. At other times, they also give chase to insects, and pursue their calling with amusing alacrity. When, at length startled, or about to join the company they have left, a sharp, short and monotonous whistle, like the word *peet*, or *péep* is uttered, and they, instantly take to wing, and course along with the company they had left. On seeing the larger marsh birds feeding, as the Yellow-Shanks and others, a whirling flock of the Peeps will descend amongst them, being generally allowed to feed in quiet; and on the approach of the sportsman, these little timorous

rovers are ready to give the alarm. At first a slender *peep* is heard, which is then followed by two or three others, and presently *peet 'pip 'pip 'p'p* murmurs in a lisping whistle through the quailing ranks, as they rise swarming on the wing, and inevitably entice with them their larger but less watchful associates. Towards evening, in fine weather, the marshes almost re-echo with the shrill, but rather murmuring or lisping, subdued, and querulous call of *peet*, and then a repetition of *pé-dèe*, *pè-dèe*, *dee dee*, which seems to be the collecting cry of the old birds calling together their brood, for when, assembled, the note changes into a confused murmur of *péet*, *péet*, attended by a short and suppressed whistle.

DOUGLAS'S STILT SANDPIPER.

According to Dr. Richardson, this species is not uncommon in the fur countries of Upper Canada, to the 60th parallel, and perhaps still further north. It exhibits the usual habits of the genus *Tringa*, frequents the interior marshes in the breeding season, and in the autumn resorts in flocks to the flat shores of Hudson's Bay, previous to taking its departure for the south.

DOUGLAS'S STILT SANDPIPER.

OF THE PLOVERS IN GENERAL.

THE Plovers have a straight, somewhat cylindrical and obtuse bill, seldom longer than the head. The feet are formed for running, with three toes, all placed forward.

The Plovers generally associate in small flocks, and the whole emigrate in companies of greater or less extent; the young collect together, pursuing their route apart from the old, and after their departure. They live principally upon small worms, and aquatic insects. The common species, and the *Guignard*, frequent the marshes and muddy borders of the larger and smaller rivers, and rarely frequent sea-shores; the other species live more habitually upon the coasts, and near the outlets of streams. The moult in most of the species is double, and the sexes are scarcely distinguishable by any exterior markings, except in the *C. cantianus*, in which the moult is only annual, and the sexes distinguishable by their livery. Some exotic species of the genus bear spines upon the shoulders of the wings, being, in fact, an approach towards the development of claws on the anterior extremities! several other species have fleshy excrescences upon the head or mandibles.

THE DOTTEREL.

DOTTEREL.

The length of the Dotterel is about ten inches. The bill is not quite an inch long, and is black. The forehead is mottled with brown and gray: the top of the head is black; and over each eye there is an arched line of white, which passes to the hind part of the neck. The cheeks and throat are white: the back and wings are of a light brown, inclining to olive, each feather margined with pale rust-color. The fore part of the neck is surrounded by a broad band of light olive-color, bordered below with white. The breast is of a pale dull orange; the middle of the belly black; and the rest of the belly and thighs are of a reddish white. The tail is olive brown, black near the end, tipped with white; and the outer feathers are margined with white. The legs are of a dark olive.

These birds are migratory; appearing in flocks of eight or ten, about the end of April, and continuing all May and June, when they become very fat, and are much esteemed for the table.

The Dotterel is in its manners a singular bird, and may be taken by an extremely simple artifice. The country people are said sometimes to go in quest of it, in the night, with a lighted torch or candle; and the bird, on these occasions, will mimic the actions of the fowler with great archness. When he stretches out an arm, it stretches out its wing; if he move a foot, it moves one also; and every other motion it endeavors to imitate.

THE STILT, OR LONG LEGGED PLOVER.

The Stilt, though rare and accidental in its visits in the colder climates, is not uncommon in eastern Europe, along the borders of lakes in Hungary, and in the interior of Asia, where, as well as in Mexico and Brazil, and sometimes in Germany and France, it is known to pass the period of reproduction. In Egypt, where it arrives in October, it probably passes the winter. According to Temminck, it was known to nest in the marshes near Abbeville in 1818, but their general resort for breeding is in the vast saline marshes of Hungary and Russia. Being a native of regions contiguous to the southern limits of the United States, there is little doubt but that it visits the whole shores of the Mexican Gulf. Its habits are altogether maritime, and it is said to feed on the spawn of fish, tadpoles, gnats, flies and other aquatic insects. The legs of this bird are remarkably slender, and longer, perhaps in proportion, than in any other known bird, it consequently staggers and reels in its gait, while balancing itself on its stilt-like legs.

LONG-LEGGED PLOVER.

THE BLACK-NECKED STILT.

The Black-necked Stilt is common to many parts of South as well as North America; it is known at any rate to inhabit the coast of Cayenne, Jamaica, and Mexico. In the United States, it is seldom seen but as a straggler as far to the north as the latitude of 41°. About the 25th of April, according to Wilson, they arrive on the coast of New Jersey in small flocks of twenty or thirty together. These again subdivide into smaller parties, but they still remain gregarious through the breeding season. Their favorite residence is in the higher and more inland parts of the greater salt marshes, which are interspersed and broken up with shallow pools, not usually overflowed by the tides during summer. In these places they are often seen wading up to the breast in water, in quest of the larvæ, spawn, flies, and insects, which constitute their food.

In the vicinity of these bare places, among thick tufts of grass, small associations of six or eight pair, take up their residence for the breeding season. They are, however, but sparingly dispersed over the marshes, selecting their favorite spots; while in large intermediate tracts, few or none are to be seen. Early in May, they begin to make their nests, which are at first slightly formed of a mere layer of old grass, just sufficient to keep the eggs from the moisture of the marsh;

in the course of incubation, however, either to guard against the rise of the tides, or for some other purpose, the nest is increased in height with the dry twigs of salt marsh shrubs, roots of grass, sea-weed, and any other coarse materials which may be convenient, until the whole may now weigh two or three pounds. The eggs, four in number, are of a dark yellowish drab, thickly marked with large blotches of brownish-black. These nests are often situated within fifteen or twenty yards of each other, the respective proprietors living in mutual friendship.

BLACK-NECKED STILT.

THE SANDERLING PLOVER.

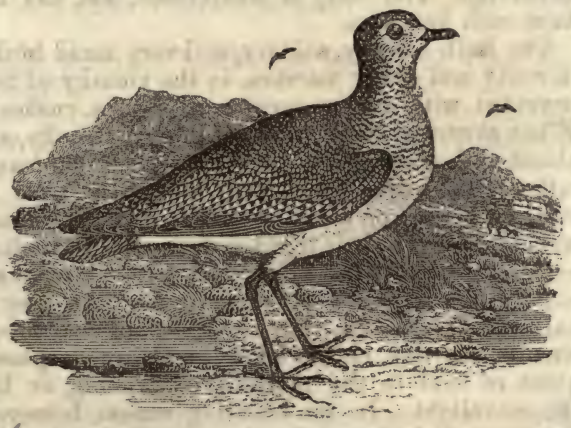
The Sanderlings, in accumulating flocks, arrive on the shores of Massachusetts from their remote northern breeding places towards the close of August. They are seen also about the same time on the coast of New Jersey, and still farther to the south, where they remain throughout the greater part of the winter, gleaning their subsistence exclusively along the immediate borders of the ocean, and are particularly attached to sandy flats, and low, sterile, solitary coasts, divested of vegetation, and

SANDERLING PLOVER.

perpetually bleached by the access of tides and storms; in such situations they are often seen in numerous flocks, running along the strand, busily employed in front of the moving waves, gleaning with agility, the shrimps, minute shell-fish, marine insects, and small moluscous animals, which ever recurring accident throws in their way. The numerous flocks, keep a low circling course along the strand, at times uttering a slender and rather plaintive whistle, nearly like that of the smaller Sandpipers. On alighting, the little active troop, waiting the opportunity, scatter themselves about in the rear of the retiring surge, the succeeding wave then again urges the busy gleaners before it, when they appear like a little pigmy army passing through their military evolutions; and at this time the wily sportsman, seizing his opportunity, spreads destruction among their timid ranks: and so little are they aware of the nature of the attack, that, after making a few aerial meanders, the survivors, pursue their busy avocations with as little apparent concern as at the first. The breeding place of the Sanderling, in common with many other wading, and aquatic birds, is in the remote and desolate regiens of the north, since they appear to be obliged to quit those countries in America a little after the middle of August. According to Mr. Hutchins, they breed on the coast of Hudson's Bay as low as the 55th parallel: and he remarks that they construct, in the marshes, a rude nest of grass, laying four dusky eggs, spotted with black, on which they begin to sit about the middle of June.

THE COMMON, OR GOLDEN PLOVER.

The Common Plover, is according to the season of the year, met with in almost every part of the world. They arrive on the coast of the middle and northern states in spring and early in autumn. Near to Nantasket and Chelsea beach, they are seen, on their return from their inclement natal regions in the north, by the close of August, and the young remain in the vicinity till the middle of October, or later, according to the state of the weather. They live principally upon land insects, or the larvæ and worms they meet with in the saline marshes, and appear very fond of grasshoppers. About the time of their departure they are, early in a morning, seen sometimes assem-



COMMON, OR GOLDEN PLOVER.

bled by thousands, but they all begin to disperse as the sun rises, and at length disappear high in the air for the season. They usually associate, however, in small flocks and families, and when alarmed, while on the wing, or giving their call to those who are feeding around them, they have a wild, shrill and whistling note, and are at most times timid, watchful, and difficult to approach. Though they continue associated in numbers for common safety during the day, they disperse in the evening, and repose apart from each other. At daybreak, however, the feeling of solitude again returns, and the early sentinel no sooner gives the shrill and well-known *call* than they all assemble in their usual company. At this time, they are often caught in great numbers by the fowler, with the assistance of a clap-net, stretched before dawn in front of the place they have selected to pass the night. The fowlers now surrounding the spot, prostrate themselves on the ground when the call is heard, and as soon as the birds are collected together, they rise up from ambush, and by shouts, and the throwing up of sticks in the air, succeed so far in intimidating the Plovers that they lower their flight, and thus striking against the net, it falls upon them. In this, and most other countries, their flesh, in the autumn, and particularly that of the young birds, is esteemed as a delicacy, and often exposed for sale in the markets of the principal towns.

OF THE RAIL TRIBE.

THE bill is thickest at the base, attenuated on the back towards the tip, compressed, a little incurved, and pointed. The tongue is rough at the tip. The body is compressed, and the tail short. The feet have each four toes.

The Rails are shy, solitary, and very timid birds, generally residing in reedy and sedgy marshes, in the vicinity of fresh and still waters, provided with a deep covert of shrubs, rushes and rank herbage. When surprised they run much oftener than fly, and skim over watery places with great agility, on the surface of the leaves of aquatic plants, rather than swim, which they seldom do from choice, though they also dive well, or when wounded, and can remain long under the water. Though their flight is ordinarily so limited, they yet perform extensive migrations. They walk with ease and swiftness; and rarely alight anywhere but on the ground. As they are chiefly nocturnal in their motions, they remain concealed, throughout the greatest part of the day, chiefly in wet and grassy places, and turn out in quest of food in the morning or evening, or by the advantage of the moonlight. In the breeding season, however, the monogamous parents and the brood they have jointly hatched, are not unfrequently seen abroad by day. They breed in marshes and thickets, nesting near waters, sometimes even forming a nest to float, and attaching it to the contiguous reeds. They feed upon worms, soft insects, as well as upon vegetables, and their seeds. Species are to be found to inhabit every part of the world.

THE LAND RAIL.

The bill of the Land Rail is short, strong, and thick. The feathers on the crown of the head, the hind part of the neck, and the back, are black, edged with bay. The coverts of the wings are of the same color; but not spotted. The tail is short and of a deep bay. The belly is white, and the legs are ash-colored. These birds generally weigh from six to eight ounces.

LAND RAIL.

The harsh cry of this bird, which somewhat resembles the word, *crek*, *crek*, *crek*, is by no means unlike the noise made by stripping forcibly the teeth of a large comb under the fingers. It is chiefly heard in the summer season, among the long grass and corn. Here the bird constantly skulks, hidden by the thickest part of the herbage, winding and doubling, in every direction, in such manner that it is generally difficult for any person to come near it. When hard pushed by the sportsman or his dogs, it sometimes stops short, and its too eager pursuers overshoot the spot, and lose all trace of it.

Ill-calculated as, from the shortness of its wings, and the position and length of its legs, this bird appears to be for flight, it certainly is able to fly with considerable swiftness. It is, in general, very unwilling to rise from the ground; and such is its timidity, that it will sometimes squat so close as to suffer itself to be taken up into the hand rather than rise.

It is a bird of passage, generally making its appearance about the same time with the Quail.

It appears that Land Rails frequent the fields more for the sake of snails, slugs, and other vermes which abound in such places, than for the grain or seeds they might find there.

The female constructs her nest on the ground, of moss and dry grass, negligently put together. The number of eggs is generally about ten or twelve, of a pale ash-color, marked with ferruginous spots. The young-ones are able to run as soon they have burst the shell.

THE CAROLINA RAIL.

The Soiree, or Common Rail of America, which assemble in such numbers on the reedy shores of the larger rivers, in the Middle and adjoining warmer States, at the approach of autumn, and which afford such abundant employ to the sportsman, at that season, like most of the tribe to which it belongs, is a bird of passage, wintering generally south of the limits of the Union. They begin to make their appearance, in the marshes of Georgia, by the close of February; and, on the 2d

of May, Wilson observed them in the low watery meadows below Philadelphia.

Like the other migrating waders, the Rails, accompanied by their swarming broods, bred in the north and west, begin to show themselves on the reedy borders of the Delaware, and on other large waters of the Middle States, whose still and sluggish streams, spreading out over muddy flats, give birth to an abundant crop of the seeds of the Wild Rice, now the favorite food of the Rails and the Rice or Reed Birds. On first arriving, from the labor and privations incident to their migrations, they are lean, and little valued as food; but as their favorite natural harvest begins to swell out and approach maturity, they rapidly fatten; and, from the middle of September to the same time in October, they are in excellent order for the table, and eagerly sought after wherever a gun can be obtained and brought into operation.

THE CAROLINA RAIL.

The usual method of shooting Rail on the Delaware, according to Wilson, is as follows. The sportsman proceeds to the scene of action in a batteau, with an experienced boatman, who propels the boat with a pole. About two hours before high water, they enter the reeds, the sportsman taking his place in the bow ready for action; while the boatman on the stern seat pushes her steadily through the reeds. The Rails generally spring singly, as the boat advances, and at a short distance ahead, are instantly shot down, while the boatman, keeping his eye on the spot where the bird fell, directs the vessel forward, and picks it up as the gunner is loading. In this manner the boat continues through and over the wild-rice marsh, the birds flushing and falling, the gunner loading and firing, while the helmsman is pushing and picking up the game; which sport continues till an hour or two after high water, when its shallowness, and the strength and weight of the floating reeds, as also the unwillingness of the game to spring as the tide decreases, oblige them to return. Several boats are sometimes within a short distance of each other, and a perpetual cracking of musketry prevails along the whole reedy shores of the river. In these excursions, it is not uncommon for an active and expert marksman to kill ten or twelve dozen in the serving of a single tide.

THE PURPLE GALLINULE.

This very splendid, but incongruous species of Gallinule, is in the United States, a bird of passage, wintering in tropical America, and passing the summer, or breeding season in the marshes of Florida and the contiguous parts of the State of Georgia, where it arrives in the latter part of April, retiring south with its brood, in the course of the autumn, and probably winters, according to its habits, in the swampy maritime districts along the coast of the Mexican Gulf.

PURPLE GALLINULE.

The Martinico Gallinule, while in the Southern States, frequents the rice-fields, rivulets, and fresh water pools, in company with the more common Florida species. It is a vigorous and active bird, bites hard when irritated, runs with agility, and has the faculty, like the Sultanas, of holding on objects very firmly with its toes, which are very long, and spread to a great extent. When walking, it jerks its tail like the common Gallinule. In its native marshes it is very shy and vigilant, and continually eluding pursuit, can only be flushed with the aid of a dog.

OF THE FLAMINGO TRIBE.

THE Flamingoes combine the characters of the two Linnæan orders, the Waders and the Swimmers. They have long necks and legs. Their bill is thick, large, and bending in the middle. The higher part of the upper mandible is keel-shaped: the lower compressed. The edges of the upper mandible are sharply indented; those of the lower transversely furrowed. The nostrils are covered above with a thin plate, and are pervious. The tongue is cartilaginous, and pointed at the end; the middle part is muscular, and the upper part acculeated

The neck is long. The legs and thighs are of great length: the feet are webbed; and the back toes very small.

THE RED FLAMINGO.

The body of the Red Flamingo is about the size of that of a Goose; but its legs and neck are of such extraordinary length, that when it stands erect it is upwards of six feet in height. The body is of a beautiful scarlet. It is an inhabitant of those parts of America that are as yet but thinly peopled.

RED FLAMINGO.

When the Europeans first visited America, they found the Flamingoes on the shores tame and gentle, and no way distrustful of mankind. If one of them was killed, the rest of the flock, instead of attempting to fly, only regarded the fall of their companion with a kind of fixed astonishment: another and another shot was discharged; and thus the fowler often levelled the whole flock, without one of them attempting to escape. Now, however, they regard us with aversion. Wherever they haunt, one of the number, it is said, is always appointed to watch while the rest are employed in feeding; and the moment he perceives the least danger, he gives a loud scream, in sound not unlike a trumpet, and instantly the whole flock is on wing. They feed in silence; but, when thus roused, they all join in the noise, and fill the air with their screams.

Their nest is of a singular construction. It is formed of mud, in the shape of a hillock, with a cavity at the top. In this the female generally lays two white eggs, of the size of those of a goose, but longer. The hillock is of such a height as to admit of the bird's sitting on it, or rather standing, as her legs are placed one on each side, at full length. Linnæus tells us that she will sometimes lay her eggs on the projecting part of a low rock, if it happen to be sufficiently convenient to admit of the legs being placed in this manner on each side.

It is not until a long time after they are hatched that the young-

ones are able to fly; but they can previously run with amazing swiftness. They are sometimes caught at this age; and, very different from the old ones, they suffer themselves to be carried away, and are easily tamed. In five or six days they become familiar, and will even eat out of the hand; and they drink a surprising quantity of sea-water. But, though easily rendered domestic, it is difficult to rear them; as they are apt to decline, from the want of their natural food.

FLAMINGO.

Flamingoes are often met with in the warmer parts of the Old Continent; and, except in the breeding-time, they are generally found in great flocks. When seen at a distance, they appear like a regiment of soldiers; being often ranged alongside of one another on the borders of rivers, searching for food, which consists principally of small fish and water-insects: these they take by plunging the bill and part of the head into the water; and from time to time trampling the bottom with their feet, to disturb the mud in order to raise up their prey. In feeding, they are said to twist their neck in such a manner, that the upper part of the bill is applied to the ground.

These beautiful birds were much esteemed by the Romans, who often used them in their grand sacrifices and sumptuous entertainments. Their flesh is thought tolerably good food; and the tongue was considered by the ancients as among the most delicate of all eatables. Pliny, Martial, and many other writers speak of it in high terms of commendation.

THE SACRED IBIS.

The Sacred Ibis inhabits Egypt, but does not seem to breed there. This is the bird so frequently depicted in the hieroglyphics as playing a conspicuous part in religious ceremonies. Their mummies are constantly found in the tombs, and in one of these mummies Cuvier discovered remnants of skin, and scales of snakes. It is a migratory bird, appearing simultaneously with the rise of the Nile, and departing as the inundation subsides. The Sacred Ibis is about the size of an ordinary fowl.

THE SCARLET IBIS.

This brilliant and exclusively American species, inhabits chiefly within the tropics, abounding in the West India and Bahama Islands, and south of the equator, at least, as far as Brazil. They migrate in the course of the summer, (about July and August,) into Florida, Alabama, Georgia, and South Carolina; but retire into Mexico, or the Carribean islands, at the approach of cool weather. They generally associate in numbers, frequenting the borders of the sea, and the banks and estuaries of neighboring rivers, feeding on small fry, shell-fish, crustacea, worms, and insects, which they collect at the ebbing of the tide. They are said to be in the habit of perching on trees in companies; but lay their eggs, which are greenish, on the ground, amidst the tall grass of the marshes, on a slight nest of leaves. When just hatched the young are black, soon changing to gray, but are nearly white before they are able to fly; by degrees they attain their red plumage, which is not complete until the third year. The young and old associate in distinct bands. In the countries where they abound they are sometimes domesticated, and accompany the poultry. The Ibis shows great courage in attacking the fowls, and will even defend itself from the insidious attacks of the cat. It is generally esteemed as good food; and its rich and gaudy plumage is used by the Brazilians for various ornaments.

SCARLET IBIS.

THE AVOCET.

The bill in the genus Recurvirostra is exactly the reverse of that in the genus Cracticornis, the curve being upwards instead of downwards. The common Avocet is spread throughout the warmer regions of Europe, and is also found in some parts of Africa. It is very common in Holland, and is frequently seen on the eastern coasts

of England, but seldom visits Scotland. It frequents marshes and the mouths of rivers, where it finds in the mud myriads of the small worms and insects on which it feeds, and which it obtains by scooping them up from the mud with its curiously curved bill. It is a good swimmer, but seldom has recourse to that art except when it wades unexpectedly out of its depth.

AVOCET.

The eggs of the Avocet are laid on the ground, in a depression sheltered by a tuft of herbage. Their color is a bluish green, spotted with black. The birds when disturbed at their nests feign lameness, like the Lapwing, in order to draw the intruder to a distance. The length of the bird is eighteen inches.

THE AMERICAN AVOCET.

The American Avocet, supposed to winter in tropical America, arrives on the coast of Cape May, in New Jersey, late in April, where it rears its young, and with them again retires to the south, early in October. In the months of spring they were observed by Mr. Say, in the lower part of Missouri. They are also known to visit Nova Scotia, though scarcely ever seen in the State of Massachusetts. Doctor Richardson also found them abundant in the Saskatchewan plains, as far as the 53rd parallel, where they frequent shallow lakes, feeding on insects, and fresh water crustacea. In New Jersey, they seem to have a predilection for the shallow pools of the salt marshes, wading about often, in search of their prey, which consists of marine worms, small paludinas, turbos, &c., to which, like the European species, they sometimes add, small *Fuci*, or marine vegetables.

AMERICAN AVOCET.

THE JACANA

JACANA.

The Jacanas are found in Asia, Africa, and America. Their light bodies and widely extended claws enable them to walk on the leaves of aquatic plants with equal ease and safety. As their weight is just sufficient to sink the leaf a little below the surface, they have quite the appearance of walking on the water itself. The Common Jacana inhabits the hotter parts of South America, and is abundant in Brazil and Guiana. It possesses large and sharp spurs on the wing. It is not a very large bird, barely exceeding a Pigeon in bulk.

THE WHITE SPOONBILL.

WHITE SPOONBILL.

The Common Spoonbill is found in Europe, Asia, Africa, and frequents Holland, together with the Stork. The strange shape of the tip of its beak has gained it the name of Spoonbill. It has rarely been taken in this country. It feeds on worms, snails, and water plants, searching for the latter by agitating the water with its broad beak.

The nest of the White Spoonbill is sometimes placed in trees, and sometimes amid rushes. It contains three whitish eggs, slightly spotted with red. The length of the bird is not quite three feet.

THE ROSEATE SPOONBILL.

ROSEATE SPOONBILL.

The Red or American Spoonbill chiefly dwells within the tropical regions of the continent, being common in Jamaica, and other of the West India islands, as well as in Mexico, Guiana, and Brazil. In the southern hemisphere they are said to exist in Peru, and as far down the coast of South America as Patagonia. North of the equator, they migrate in summer into Florida, and are met with to the confines of the Altamaha, in Georgia. Wilson's specimen was obtained up the Mississippi, at the town of Natchez, (about

the latitude of 32°.) They are also occasionally met with on the river shores of the Alabama, and in other parts of that State. A straggler has been known to wander as far as the banks of the Delaware.

According to the relation of Captain Henderson, in his account of Honduras, this species is more maritime in its habits than that of Europe, as it wades about in quest of shell fish, marine insects, fry, and small crabs; and in pursuit of these, according to him, it occasionally swims and dives.

THE SPOTTED TATLER, OR PEET WEET.

The Peet Weet, is one of the most familiar and common of all the New England marsh birds, arriving along our river shores and low meadows, about the beginning of May, from their mild or tropical winter quarters, in Mexico, and probably the adjoining islands of the West Indies. By the 20th of April, Wilson observed their arrival on the shores of the large rivers in the State of Pennsylvania. They migrate and breed from the Middle States, in all probability, to the confines of the St. Lawrence, or further; but were not seen by Dr. Richardson, or any of the Arctic expeditions, in the remote boreal regions, or around Hudson's Bay, as had been asserted by Hutchinson. It is also an accidental visitor in the old continent, being sometimes observed on the coasts of the Baltic, and in Germany, but still more rarely in Great Britain. As to residence, therefore, the Spotted Tatler may be considered as exclusively American, and confined chiefly to the limits of the more temperate parts of the Union.

SPOTTED TATLER.

As soon as the Peet Weet arrives on the coasts, small roving flocks are seen, at various times of the day, coursing rapidly along the borders of our tide water streams, flying swift and rather low, in circuitous sweeps along the meanders of the creek or river, and occasionally crossing from side to side, in rather a sportive and cheerful mien, than as the needy foragers they appear at the close of autumn. While flying out in these wide circuits, agitated by superior feelings to those of hunger and necessity, we hear the shores re-echo the shrill and rapid whistle of *'weet, 'weet, 'weet, 'weet,* and usually closing the note

with something like a warble, as they approach their companions on the strand. The cry then varies to *'peet, weet weet weet*, beginning high and gradually declining into a somewhat plaintive tone. As the season advances, our little lively marine wanderers often trace the streams some distance into the interior, nesting usually in the fresh meadows among the grass, sometimes even near the house, and I have seen their eggs laid in a strawberry bed, and the young and old pleased with their allowed protection, familiarly fed and probed the margin of an adjoining duck pond, for their usual fare of worms and insects.

THE YELLOW SHANKS TATLER.

The Yellow-Shanks, in certain situations, may be considered as the most common bird of the family in America. Its summer residence or breeding station, even extends from the Middle States to the northern extremity of the continent, where it is seen, solitary or in pairs, on the banks of rivers, lakes, or in marshes, in every situation contiguous to the ocean. And though the young and old are found throughout the warm season of the year in so many places, the nest and eggs are yet entirely unknown. Calculating from the first appearance of the brood abroad, they commence laying by the middle of June, and are seen in this neighborhood at that season. It resides chiefly in the salt marshes, and frequents low flats and estuaries, at the ebb of the tide, wading in the mud, in quest of worms, insects, and other small marine and fluvatile animals. They seldom leave these maritime situations, except driven from the coast by storms, when they may occasionally be seen in low and wet meadows, as far inland as the extent of tide-water. The Yellow-Shanks has a sharp whistle of three or four short notes, which it repeats when alarmed and when flying, and sometimes utters a simple, low, and rather hoarse call, which passes from one to the other, at the moment of rising on the wing. It is very impatient of any intrusion on its haunts, and thus often betraying, like the preceding, the approach of the sportsman to the less vigilant of the feathered tribes, by flying around his head, with hanging legs and drooping wings, uttering its incessant and querulous cries.

YELLOW SHANKS TATLER

THE GREAT MARBLED GODWIT

The Marbled Godwit is only a transient visitor along the sea coasts of the United States, in the spring and fall, on its way to and from its breeding place in the north. According to Richardson, they abound in the summer season in the interior of the fur countries, being particularly plentiful on the Saskatchewan plains, where it frequents marshes and bogs, walking on the surface of the swamp moss, (*Sphagna*,) and thrusting down its bill to the nostrils in quest of worms and leeches, which it discovers by the sensitive point of its bill, thus finding means to obtain a kind of food which would otherwise be imperceptible to any other sense. They, no doubt, likewise vary their fare, and feed also upon insects, and larvæ. They arrive on the coasts of the Middle States in the month of May, and linger on till some time in June. Many, however, at this time, have already arrived at their ultimate destination in the north, so that it is not improbable but some of these Godwits may breed in more temperate regions to the west as well as north, selecting the high plains of the Rocky Mountains, in situations sufficiently moist. At all events, they are seen in the lower part of Missouri, in the course of the spring, but migrate, like most other waders, along the sea coast, in the way to their tropical winter quarters.

GREAT MARBLED GODWIT.

The Marbled Godwit, in large flocks, appears in the salt marshes of Massachusetts, about the middle of August, particularly towards the eastern extremity of the Bay, around Chatham, and the Vineyard; their stay is, however, very short, and they, at the same time, no doubt, visit the eastern coast of Long Island. On these occasions, they are assembled by many hundreds together, and usually associate with the Short Billed Curlews, they themselves being called Red Curlews; though here they are distinguished by the name of Doe-birds, and, being at this season fat, are highly esteemed for the table. They

are very shy and cautious, but when once confused by the fall and cries of any of their companions, great destruction may be made among them before they recover from the delusion; they thus make repeated circuits round the wounded and complaining, and may also be enticed within gunshot, by imitating their whistling call in the manner of the Curlew. Indeed, without some contrivance of this kind, they can seldom ever be approached, They are seen it appears, in the Middle States as late as October, or November, but are not met with on the Massachusetts coast beyond the close of September.

BARTRAM'S TATLER.

Bartram's Tatler, known here by the name of the Upland Plover, so very distinct from the rest of the tribe with which it is associated in the systems, is one of the most common birds along the sea coast of Massachusetts, making its appearance with its fat and well-fed brood, as early as the 20th of July, becoming more abundant towards the middle of August, when the market of Boston is amply supplied with this delicate and justly esteemed game.

BARTRAM'S TATLER.

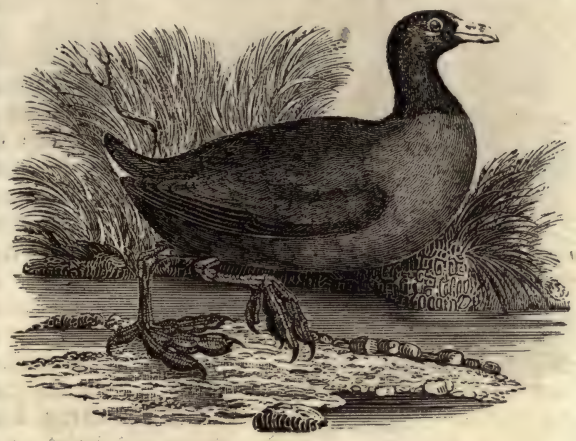
According to the season of the year, they are found throughout the continent, many retiring south of the equator to pass the winter. They are observed in May, already busily gleaning coleopterous insects on the remote boreal plains of the Saskatchewan, and abound in the extensive prairies west of the Mississippi. At this time, and in June, they are seen common also, in Worcester county, (Mass.) and are believed to breed there. They are equally frequent on the plains of Long Island and New Jersey, and in similar bare and dry pastures in various parts of Massachusetts, particularly about Sekonk, and in Rhode Island, near to the sea-coast, where they pass the greater part of the summer. Wilson, who first described the species, met with it in the meadows of the Schuylkill, pursuing insects among the grass with great activity. As a straggler, it has been seen, though very rarely, in Germany or Holland.

The breeding range of this species, extends, in all probability, from Pennsylvania to the fur countries of Upper Canada, as well as

westward, on either side of the Mississippi. Scattering broods and nests, made in dry meadows, are not uncommon a few miles from Salem, where Mr. N. West informs me, he saw the young just fledged, in the month of July.

THE COOT.

The Coot much resembles the Water-hen in its habits. It is usually found in large sheets of water, particularly if sheltered by trees. The nest is a huge mass of flags, reeds, and grass, usually at the water's edge, but sometimes actually in the water. In 1849 I took five Coot's eggs from a nest situated at the Reservoir near Swindon. The nest was nearly fifty yards from the bank, and was made on a very small sunken hillock, in three feet water. In the nest are from seven to ten greenish white eggs, spotted with brown.



COOT.

THE CRESTED GREBE, OR GAUNT.

The Crested Grebe, inhabiting the northern parts of both the old and new continents, is met with in Iceland, northern Europe, and the cold as well as temperate parts of Siberia; in winter passing south as far as Italy, and along the coasts of the Mediterranean. In America, they are found in all the secluded reedy lakes of the mountainous and woody districts, in the remote fur countries around Hudson's Bay. This species is also common in some parts of England, where it is known by the provincial name of Cargoose, or Gaunt. They breed in the meres of Shropshire and Cheshire, and in the eastern fen of Lincolnshire. They also pass the period of reproduction in some of the Scottish Isles, particularly in Zetland, and are abundant in Germany, Holland, and France. In the United States they are only seen in winter, proceeding leisurely towards the south, as the severity of the season increases, often migrating by water, rather than on the wing, and keeping generally at no great distance from the sea, or tide-water estuaries, thus securing their retreat from the surprise of sudden and severe frost.

The nest of the Crested Grebe, concealed among the reeds and flags of the ponds, in which they dwell in the summer, is made of rushes, and the coarse aquatic herbage contiguous to the chosen spot, and so constructed as often to float about on the rise of the surrounding water which penetrates it, notwithstanding which, the female still sits steadfastly on the floating habitation, defended securely from the access of the water, by the density of her oily and downy plumage. The eggs, three or four, are of a whitish-green, waved, or, as it were, soiled with deep brown. The young are fed sometimes with small eels, and fry; and according to Pennant, when endangered or fatigued, the female will carry her brood upon her back, or under her wing. Their food consists of fish, fry, coleoptera, marine worms, and often, in part, of vegetables. In Canada, from their remarkable agility in diving, they are known by the name of Water Witches, and are here called Dippers, as they plunge beneath the water on the least appearance of danger, depending very little on their wings for safety; and when most disturbed seldom fly farther than from one side of the pool to the other. The young are said to be common in the winter season, in small flocks, on the lake of Geneva, in Switzerland, and are killed for the sake of their beautiful skins; the under side being dressed, with the feathers on, are made into muffs and tippets.

CRESTED GREBE.

THE LITTLE GREBE, OR DABCHICK.

The Dabchick, the smallest of the species, in length only about ten inches, is again a race of birds common to the colder parts of both continents, having been seen round Hudson's Bay, though hitherto unknown even as a visitor within the limits of the United States. This is the least and most plentiful species, being common in Europe and the north of Asia in most lakes, slow running rivers, streams, and ponds, which are well supplied with the shelter of reeds. It seldom takes to wing, but dives on the least alarm, and will remain under water amongst the floating weeds and sheltering herbage, with its bill

alone elevated above for respiration. Its nest, like that of other Grebes, is formed of a large quantity of coarse aquatic plants, piled together to the thickness of a foot, and is generally fastened to the reeds or flags, in order to prevent its removal by the current. The eggs, five or six in number, are of a dirty white, and somewhat less than those of a Pigeon. These are generally covered with weeds for concealment in the absence of the birds; yet with every precaution they are frequently destroyed by the Water Rat.

LITTLE GREBE.

In large rivers these little divers are often devoured by Pike and Trout, while they are themselves engaged in the pursuit of small fish. In the spring the males are very active in pursuit of their intended mates, and at such times frequently fly along the surface of the water to a small distance, uttering often a shrill chattering noise. After the breeding season, they frequent the inlets of the sea, and feed on shrimps and other marine productions. This species is not uncommon in most parts of the old continent, but is by no means frequent in the north.

THE RED PHALAROPE.

The Flat-billed, or Red Phalarope, inhabits the whole Arctic circle during summer, where, in the security of solitude, it passes the important period of reproduction. It is observed in the north and east of Europe; in abundance in Siberia, upon the banks of lakes and rivers, and it extends its vernal migrations to the borders of the Caspian. They abound in the hyperboreal regions of America, breeding on the North Georgian Islands, and the remote and wintry coasts of Mellville Peninsula. The late enterprising and scientific northern navigators, on the 10th of June, in the latitude of 68°, saw a company of these little daring voyagers out at sea, four miles from land, swimming at their ease, amidst mountains of ice. They are seen also by mariners between Asia and America. According to Mr. Bullock, the Red Phalarope is found common in the marshes of Sunda and Westra, the most northerly of the Orkney Isles, where they pass the breeding season, and are there so tame, and little alarmed by the destructive

arts of man, as to suffer the report of a gun without fear, so that Mr. B. killed as many as nine of them without moving from the spot where he made the first discharge. When seen swimming in pools, it is continually dipping the bill into the water as if feeding on some minute insects, and while thus engaged it will often allow of a very near approach. When disturbed they fly out a short distance only, like the Dunlins. Sometimes, though rarely, they are seen to approach the shore or the land in quest of food, but their proper element is the water, and more particularly that of the sea or saline pools.

RED PHALAROPE.

The Flat-billed Phalarope breeds around Hudson's Bay in the month of June, soon after their arrival from their tropical winter quarters; for this purpose, they select some dry and grassy spot, wherein they lay about four eggs of an oil-green color, crowded with irregular spots of dark umber brown, which become confluent towards the obtuse end. The young take to wing in July, or early in August, and they leave the inclement shores of their nativity in the month of September. At this period, as well as in the spring, a few stragglers visit the United States, where they have been occasionally shot in the vicinity of Philadelphia and Boston. These and other species are also seen, in the autumn, about Vera Cruz, where they are sold with other game in the market. Their visits in England and Germany are equally rare as in the United States, and they have been known sometimes to stray into Switzerland, having been shot on the lake of Geneva.

SWIMMERS.

In the *Anseres*, or Swimmers, the bill is smooth, obtuse at the point, and covered with a membranaceous skin. The legs are short and compressed; and the feet formed for swimming, the toes being connected by a membrane.

OF THE DUCK TRIBE IN GENERAL.

The bill in this tribe (which comprehends Swans and Geese, as well as Ducks) is strong, broad, flat, and generally furnished at the end with a kind of nail: the edges of the mandibles are marked with sharp serratures. The nostrils are small and oval. The tongue is broad, having the edges fringed near the base. The toes are four in number, three before and one behind; the middle one is the longest.

THE HOOPER OR WHISTLING SWAN

The Whistling Swan is somewhat smaller than the tame species The bill is three inches long; yellowish white to the middle, but black at the end. The whole plumage is white; and the legs are black.

HOOPER, OR WHISTLING SWAN.

This species is an inhabitant of the northern regions; never appearing in England, except in hard winters, when flocks of five or six are now and then seen.

In Iceland these birds are an object of chase. In the month of August they lose their feathers to such a degree, as not to be able to fly. The natives, at that season, resort in great numbers to the places where they most abound; and are accompanied with dogs, and active and strong horses, trained to the sport, and capable of

passing nimbly over the boggy soil and marches. The Swans are able to run as fast as a tolerably fleet horse. The greater number are caught by the dogs, which are taught to seize them by the neck; a mode of attack that causes them to lose their balance, and become an easy prey.

Notwithstanding their size, these birds are so extremely swift on the wing, when in full feather, as to make them more difficult to be shot than almost any others; it being frequently necessary to aim ten or twelve feet before their bills. This, however, is only when they are flying before the wind in a brisk gale; at which time they seldom proceed at the rate of less than a hundred miles an hour: but when flying across the wind or against it, they are not able to make any great progress.

SWAN.

The present species has several marks of distinction from that called by us the Tame Swan: but the most remarkable one is the strange form of the windpipe; which falls into the chest, then turns back like a trumpet, and afterwards makes a second bend to join the lungs. By this curious construction the bird is enabled to utter a loud and shrill note. The tame Swan on the contrary, is the most silent of all the feathered tribes; it can do nothing more than hiss, which it does on receiving any provocation. The vocal Swan emits its loud notes only when flying, or calling: the sound is *whoogh*, *whoogh*, very loud and shrill, but not disagreeable when heard high in the air and modulated by the winds. The Icelanders compare it to the notes of the violin; they hear it at the end of their long and gloomy winter, when the return of the Swans announces also the return of summer; every note, therefore, must to them be melodious, which presages a speedy thaw, and a release from their tedious confinement.

THE TAME, OR MUTE SWAN.

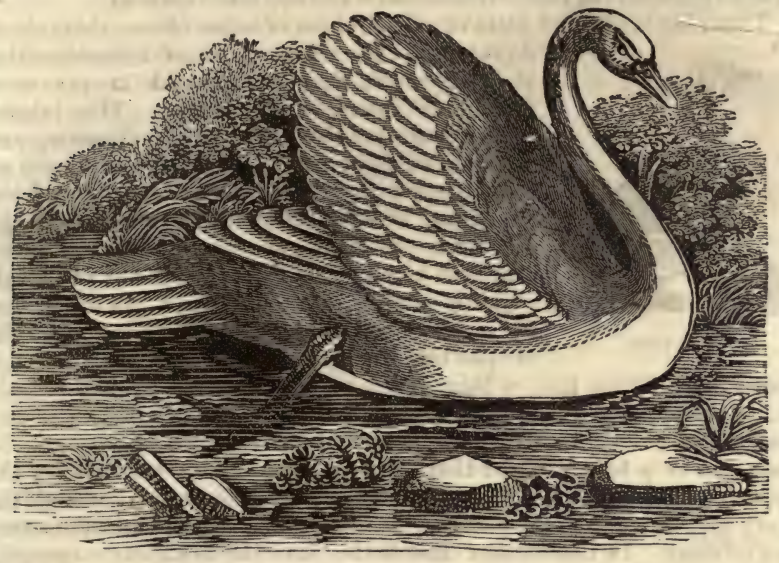
Nothing can exceed the beauty and elegance with which the Swan rows itself along in the water, throwing itself into the proudest attitudes imaginable before the spectators; and there is not perhaps in all nature a more lively or striking image of dignity and grace.

This bird is able to swim faster than a man can walk. The Swan is very strong, and at times extremely fierce: and this bird has not unfrequently been known to throw down and trample upon youths of fifteen or sixteen years of age; and an old Swan, we are told, is able to break the leg of a man with a single stroke of its wing. A female, while in the act of sitting, observed a Fox swimming towards her from the opposite shore: she instantly darted into the water, and having kept it at bay for a considerable time with her wings, at last succeeded in drowning him; after which, in the sight of several persons, she

returned to her nest in triumph. This circumstance took place at Pensy in Buckinghamshire.

Swans are very long-lived, sometimes attaining the great age of a hundred years. The flesh of the old birds is hard and ill-tasted; but that of the young-ones, or cygnets, was formerly much esteemed.

The Swan makes its nest of grass, among reeds; and in February



TAME SWAN.

begins to lay, depositing an egg every other day till there are six or eight. These occupy six weeks in hatching. Dr. Latham says, he knew two females that for three or four years successively agreed to associate, and had each a brood yearly, bringing up together about eleven young-ones: they sat by turns, and never quarrelled. These birds are found wild in Russia and Siberia.

THE BLACK SWAN.

"Like a Black Swan," was formerly a well known proverb, analogous to the Horse Marines of the present day; unfortunately for the proverb a Swan has been discovered in Australia, the whole of whose plumage is a jetty black, with the exception of the quill feathers, which are white. It has been domesticated in England, and may be seen in St. James' Park, eagerly seeking after the crumbs offered by juvenile hands. It is rather smaller than the Whistling Swan.

THE SNOW GOOSE.

This bird is about the size of the common Goose. The upper man-

dible of the bill is scarlet, and the lower one whitish. The general color of the plumage is white; except the first ten quills of the wings, which are black with white shafts. The young birds are of a blue color, till they are a year old. The legs are red.

Snow Geese are very numerous about Hudson's Bay; where they are migratory, going further northward to breed. They are also found in several of the northern parts of the Old Continent.

These birds have so little of the shyness of other Geese, that, about Jakut, and the other parts of Siberia which they frequent, they are caught in the most ridiculous manner imaginable. The inhabitants place near the banks of the rivers a great net in a straight line; or else form a hovel of skins sewed together. This done, one of the company dresses himself in the skin of a white rein-deer, advances towards the flock of Geese, and then turns back towards the net or hovel; and his companions go behind the flock, and, by making a noise, drive them forward. The simple birds mistake the man in white for their leader, and follow him within reach of the net; which is suddenly pulled down, and thus captures the whole. When he chooses to conduct them even into the hovel, they follow in a similar manner; he creeps in at a hole left for that purpose, and out at another on the opposite side, which he closes up. The Geese follow him through the first; and as soon as they are in, he passes around and secures every one of them. In that frozen climate the Snow Geese afford an essential means of subsistence to the natives; and their feathers are an article of commerce. Each family kill thousands in a season; and, after plucking and gutting them, they fling them in heaps, into holes dug for that purpose, and covered only with earth. The mould freezes and forms over them an arch; and whenever the family have occasion to open one of these magazines, they find their provisions perfectly sweet and good.

SNOW GOOSE

THE WILD GOOSE.

These birds are often seen in flocks of from fifty to a hundred, flying at very great heights, and seldom resting by day. Their cry is frequently heard while, from their distance above, they are imperceptible to the sight. Whether this be their note of mutual encouragement, or only the necessary consequence of respiration, seems doubtful; but they seldom exert it when they alight in their journeys. On the ground they always arrange themselves in a line, and seem to descend rather for rest than refreshment, for having continued

WILD GOOSE.

there an hour or two, one of them with a long loud note, sounds a kind of signal, to which the rest always punctually attend, and, rising in a group, they pursue their journey with alacrity. Their flight is conducted with vast regularity. They always proceed either in a line abreast, or in two lines joining in an angle at the middle. In this order they often take the lead by turns, the foremost falling back in the rear when tired, and the next in station taking his place. Their track is generally so high, that it is almost impossible to reach them from a fowling-piece; and even when this can be done, they file so equally, that one discharge seldom kills more than a single bird.

WILD GOOSE

TAME GOOSE.

They breed in the plains and marshes about Hudson's Bay in North America: in some years the young ones are caught in considerable numbers · and at this age they are easily tamed. It is, however, singular, that they will never learn to eat corn, unless some of the old ones be caught along with them.

Our common tame Goose is no other than this species in a state of domestication.

These birds are kept in vast quantites in the fens of Lincolnshire; several persons there having as many as a thousand breeders. They are bred for the sake of their quills and feathers; for which they are stripped while alive, once in the year for the quills, and five times for the feathers.

However simple in appearance, or awkward in gesture, the Goose may be, it is not without many marks both of sentiment and understanding. The courage with which it protects its offspring and defends itself against ravenous birds, and certain instances of attachment and even of gratitude, which have been observed in it, render our general contempt of the Goose ill-founded.

TAME CHINA GOOSE.

THE BERNACLE GOOSE.

The usual weight of this bird is about five pounds. The bill is short and black, crossed with a flesh-colored mark on each side. Part of the head, the chin, throat, and under parts of the body, and the upper tail-coverts are white; and the rest of the head and neck, and the beginning of the back, are black. The thighs are mottled. Round the knee the feathers are black; and the lower feathers of the back are the same, edged with white. The wing-coverts and scapulars are blue gray: the

ends black, fringed with white at the tip. The rump, tail and legs are black.

Of all the marvellous productions which ignorance, ever credulous, has substituted for the simple and truly wonderful operations of nature, perhaps the most absurd is the assertion that this species of Goose grows in a kind of shell, called *Lepas anatifera*, (Goose-bearing shell) on certain trees on the coast of Scotland and the Orkneys, or on the rotten timbers of old ships.

BERNACLE GOOSE.

In winter Bernacle Geese are not uncommon on many of the northern and western coasts of Great Britain; but they are scarce in the south, and are there seldom seen except in inclement seasons. They leave England in February, and retire northward to breed.

THE CANADA GOOSE.

This is a bird somewhat bigger than the tame Goose. The bill, the head, and the neck, are black; and under the throat there is a broad white band, like a crescent. The breast, the upper part of the belly, the back, and wing-coverts, are dusky brown; the lower parts of the neck and belly, and upper tail-coverts, white. The quills and tail are black, and the legs dark lead-color.

Canada Geese inhabit the more distant parts of North America. Immense flocks of these birds appear annually in the spring in Hudson's Bay: they pass further north to breed; and return southward in the autumn. The English at Hudson's Bay depend greatly on Geese, of this and other kinds, for their support; and in favorable years they often kill three or four thousand, which they salt and barrel. The arrival of the birds is impatiently waited, because they are considered the harbingers of the spring, and the month in which they return is named by the Indians the *Goose* Moon.

The English settlers send out their servants, as well as the Indians, to shoot these birds on their passage. The men for this purpose form of boughs a row of huts, at gun-shot distance from each other, and in a line across the vast marshes of the country. The sportsman remains motionless, and on his knees, with his gun cocked the whole time; and does not fire till he can perceive the eyes of the Geese. The Geese that he has killed, he sets up on sticks, as if alive, to decoy others; he also makes artificial birds for the same purpose.

CANADA GOOSE.

THE CEREOPSIS.

The Cereopsis is a native of New Holland. It is about the size of the common Goose and nearly of the same carriage, with the exception of the length of the legs. A broad patch on the top of the head is of a dull white, and the rest of the plumage of a dingy grey, deeper on the upper than on the under parts, having the extremity of each of the feathers of the back margined with a lighter band, and most of the wing-coverts and secondary quill-feathers marked with rounded dusky spots of from two to four lines in diameter.

CEREOPSIS.

THE BRANT, OR BRENT GOOSE.

The Brent is another of the hardy aquatic birds common to the hyperboreal regions of both continents. They breed in great numbers on the coasts and islands of Hudson's Bay and the Arctic Sea, and are rarely seen in the interior. In Europe they proceed to the most northern isles of Greenland, and to the dreary shores of Spitsbergen. In winter they are very abundant in Holland and in Ireland, as well as in Scotland, where they remain until spring. In America, though they visit in the course of their migrations, most of the Northern and Middle States, they proceed still farther south, to spend the winter, being seen on the Mississippi nearly to New Orleans. They retire from their natal regions in the north in September: and early in October are seen to arrive in great numbers about Ipswich, Cape Ann, and Cape Cod in Massachusetts, continuing to come till the month of November, and generally appearing in great numbers after the occurrence of an eastwardly storm. In hazy weather they also fly low and diverge into the bays and inlets. Many of these wandering flocks pass on to the south almost without any delay, usually in marshalled and angular lines, but sometimes in a confused gang, loudly gabbling as they proceed. Their stay here is commonly so short that it is necessary to ambuscade in huts on their route in order to obtain them.

BRANT GOOSE.

THE EIDER DUCK.

This species is about twice the size of the common Duck. Its bill is black, and the feathers of the forehead and cheeks advance far into the base. In the male, the feathers of part of the head, of the lower part of the breast, the belly, and the tail, are black, as are also the quill-feathers of the wings; and nearly all the rest of the body is white. The legs are green. The female is of a reddish brown color, variously marked with black and dusky streaks. The Eider Duck is principally

found in the western isles of Scotland, and on the coasts of Norway, Iceland, and Greenland.

In Iceland, the Eider Ducks generally form their nests on small islands not far from the shore; and sometimes even near the dwellings of the natives, who treat them with so much attention and kindness as to render them nearly tame. Sometimes two females will lay their eggs in the same nest, in which case they always agree remarkably well.

EIDER DUCK.

As long as the female is sitting, the male continues on watch near the shore: but as soon as the young-ones are hatched he leaves them. The mother, however, remains with them a considerable time afterwards. It is curious to observe her manner of leading them out of the nest, almost as soon as they creep from the eggs. Going before them to the shore, they trip after: and, when she comes to the water-side, she takes them on her back, and swims a few yards with them; when she dives, and the young-ones are left floating on the surface, and are obliged to take care of themselves. They are seldom seen afterwards on land.

From these birds is produced the soft down so well known by the name of *eider* or *eider-down*. This the old birds pluck from their breasts in the breeding season, to line their nests: making with it a soft bed for their young-ones. When the bird-catchers come to the nest, they carefully remove the female, and take away the superfluous down and eggs; after this they replace her. She then begins to lay afresh, and covers her eggs with new down, which she plucks from her body. When she has no more left, the male comes to her assistance, and covers the eggs with his down, which is white, and easily distinguished from that of the female. When the young-ones leave the nest, which is about an hour after they are hatched, it is once more plundered.

EIDER DUCK.

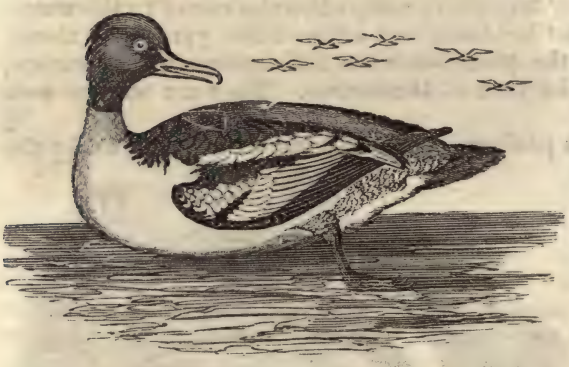
The best down and the most eggs, are obtained during the first three weeks after the nest is formed; and it has generally been observed, that the birds lay the greatest number of eggs in rainy weather. One female, during the time of laying, generally yields half a pound of down; which, however, is reduced one-half after it is cleansed.

The eider-down, when pure, is of such value that it is sold in Lapland for two dollars a pound. It is extremely soft and warm, and so light and expansive, that a couple of handsful squeezed together, are sufficient to fill a down quilt;—a covering like a feather-bed, used in cold countries instead of a common quilt or blanket.

The Greenlanders kill these birds with darts; pursuing them in their little boats, watching their course by the air-bubbles when they dive, and always striking at them when they rise wearied to the surface. The flesh is valued as food, and their skins are made into warm and comfortable under-garments.

THE GOOSANDER.

The Goosander inhabits the remote northern regions of both continents, being seen during summer on the borders of grassy lakes and streams through the whole of the fur countries, and are among the latest of their tribe in autumn to seek an asylum in milder climates. They are said to breed in every latitude in the Russian empire, but mostly in the north.

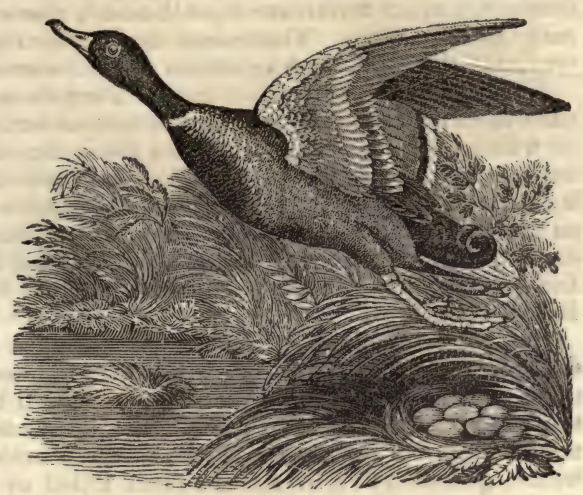


GOOSANDER.

They are common also in Kamtschatka and extend through northern Europe, to the wintry shores of Iceland and Greenland. Many, however, pass the breeding season in the Orkneys, and these scarcely ever find any necessity to migrate. They are seen in small families or companies of six or eight in the United States in winter, and frequent the sea shores, lakes and rivers, continually diving in quest of their food, which consists principally of fish and shelly mollusca. They are also very gluttonous and voracious, like the Albatross sometimes swallowing a fish too large to enter whole into the stomach, which therefore lodges in the œsophagus till the lower part is digested before the remainder can follow. The roughness of the tongue, covered with incurved projections, and the form of the bent serratures which edge the bill, appear all purposely contrived with reference to its piscatory habits. In the course of the season they migrate probably to the extremity of the Union, being seen in winter in the Mississippi and Missouri, from whence at the approach of spring they migrate north or in the interior to breed

THE COMMON WILD DUCK.

Wild Ducks frequent marshy places; but no where in such abundance as in Lincolnshire, (England,) where prodigious numbers of them are annually taken in the decoys. In only ten decoys in the neighborhood of Wainfleet, as many as thirty-one thousand two hundred have been caught in one season.



COMMON WILD DUCK.

A decoy is a pond generally situated in a marsh, so as to be surrounded with wood or reeds, and, if possible, with both, for the purpose of preventing the birds which frequent it from being disturbed. In this pond the birds sleep during the day; and, as soon as the evening sets in, the decoy *rises*, (as it is termed,) and the wild-fowl feed during the night. If the evening be still, the noise of their wings during flight is heard at a great distance, and is a pleasing though somewhat melancholy sound. *The decoy-ducks* (which are either bred in the pond-yard, or in the marshes adjacent; and which, although they fly abroad, regularly return for food to the pond, and mix with the tame ones that never quit the pond) are fed with hemp-seed, oats, and buck-wheat. In catching the wild birds, hemp-seed is thrown over the screens to allure them forward into the *pipes;* of which there are several, leading up a narrow ditch, that closes at last with a *funnel-net.* Over these *pipes*, which grow narrower from the first entrance, there is a continued arch of netting suspended on hoops. It is necessary to have a *pipe* for almost every wind that can blow, as on that circumstance it depends which *pipe* the fowl will take to. The decoy-man likewise always keeps to the leeward of the wild-fowl, and burns in his mouth or hand a piece of *Dutch turf*, that his effluvia may not reach them; for, if they once discover by the smell that a man is near, they all instantly take flight. Along each *pipe* are placed *reed screens*, at certain intervals, to prevent him from being seen till he thinks proper to show himself, or the birds have passed up the *pipe* to which they are led by the trained Ducks, (which know the man's whistle,) or enticed by the hemp-seed. A Dog is sometimes used, who is taught to play backward and forward between the screens, at the

direction of his master. The fowl roused by this new object, advance towards it, while the Dog is playing still nearer the entrance of the *pipes*; till at last the decoy-man appears from behind the screens, and the wild-fowl not daring to pass by him, and unable to fly off on account of the net covering the hoops, press forward to the end of the funnel-net, which terminates upon the land, where a person is stationed ready to take them. The trained birds return back past the decoy-men, into the pond, till a repetition of their services is required.

Wild Ducks are very artful birds. They do not always build their nests close to the water, but often at a considerable distance from it; in which case the female will take the young-ones in her beak, or between her legs, to the water. They have sometimes been known to lay their eggs in a high tree, in a deserted Magpie or Crow's nest; and an instance has been recorded of one being found at Etchingham, in Sussex, sitting upon nine eggs, in an oak, at the height of twenty-five feet from the ground: the eggs were supported by some small twigs laid crossways.

Prodigious numbers of these birds are taken by decoys, near Picardy in France, particularly on the river Somme. It is customary there, to wait for the flock's passing over certain known places: when the sportsman having ready a wicker cage containing a number of tame birds, lets out one at a time, which enticing the passengers within gun-shot, five or six are often killed at once by an expert marksman. They are now and then also caught by means of hooks baited with raw meat, which the birds swallow while swimming on the water.

Other methods of catching Ducks and Geese are peculiar to certain nations: one of these, from its singularity, seems worth mentioning. A person wades into the water up to the chin; and, having his head covered with an empty *calabash*, approaches the place where the Ducks are. These, not regarding an object of this kind, suffer the man freely to mix with the flock; and he has only to pull them by the legs under the water, one after another, and fix them to his belt, till he is satisfied. This curious method is frequently practised on the river Ganges, the earthen vessels of the Gentoos being there used instead of calabashes. These vessels are what the Gentoos boil their rice in: after having been once used, they are considered as defiled, and are thrown into the river as useless. The duck-takers find them convenient for their purpose; as the Ducks, from seeing them constantly float down the stream, consider them as objects not to be regarded.

The Chinese make great use of Ducks, but prefer as food the tame to the wild ones. It is said that the major part of the Ducks in China are hatched by artificial heat. The eggs, being laid in boxes of sand, are placed on a brick hearth, to which is given a proper heat during the time required for hatching. The Ducklings are fed with craw-fish and crabs, boiled and cut small, and afterwards mixed with boiled rice: and in about a fortnight they are able to shift for themselves. The Chinese then provide them an old *stepmother* who leads them where to find provender; being first put on board a *sampane*, or boat, which is destined for their habitation; and from which the whole

flock, often to the amount of three or four hundred, go out to feed, and return at command. This method is used nine months out of twelve, (for in the colder months it does not succeed,) and it is so far from a novelty, that it may every where be seen, but more especially about the time of cutting the rice, and gleaning the crop, when the masters of the Duck-sampanes row up and down the river, according to the opportunity of procuring food, which is found in plenty, at the tide of ebb, on the rice plantations, as they are overflowed at high water. It is curious to observe how the Ducks obey their masters; for some thousands, belonging to different boats will feed on the same spot, and, on a signal given, will follow their leader to their respective sampanes, without a single stranger being found among them. This is still more extraordinary, if we consider the number of inhabited sampanes* on the Tigris: there are supposed to be no fewer than *forty thousand;* they are moored in rows close to each other, with here and there a narrow passage for boats to sail up and down the river.

CHINESE DUCK.

THE GARGANEY.

This bird is somewhat larger than the Teal. The bill is black The crown and hind part of the head are of a dusky brown. On the chin there is a large black spot; and, from the eye, a white streak passes to the back of the head. The cheeks and neck are of a pale purple and white. The breast is light brown, crossed with semi-circular bars of black: and the belly is white, having its lower parts varied with dusky specks. The legs are lead-colored.

GARGANEY.

A couple of these birds were for more than two months in the possession of M. Frisch, who has given the following detail of their mode of living in this sort of incipient domestication. "I presented to them (he says) different seeds, and they would touch none: but scarcely had I set beside their water-trough, a basin filled with millet, than they both ran to it. At every bill-full which they took each went to the water, and they carried as much water as, in a short time, completely to soak the millet; yet the grain was not moistened sufficiently to their mind, and I saw them busied in carrying millet and water to the ground of their pen, which was of clay, and when the bottom was softened and tempered enough, they began to dabble, and

* Sampane is a common name for a boat: the inhabited sampanes contain each a separate family, of which they are the only dwelling; and many of the Chinese pass almost their whole lives in this manner on the water

made a cavity, in which they ate their millet, mixed with earth. I put them into a room, and they carried in the same way, though to little purpose, the millet and water to the deal floor. I led them on the grass, and they seemed to do nothing but dig for seeds, without eating the blades, or even the earth-worms. They pursued flies, and snapped at them like Ducks. When I delayed to give them their accustomed food, they called for it with a feeble hoarse cry, *quoak*, repeated every minute. In the evening they lay in the corners; and even during the day, when any person went near them, they hid themselves in the narrowest holes. They lived thus till the approach of winter, but when the severe cold set in, they both died suddenly."

THE GADWALL, OR GREY.

The Gadwall inhabits the northern regions of both continents, but does not in America, according to Richardson, proceed farther than the 68th parallel, and in Europe it seems not to advance higher than Sweden. In the Russian empire it extends over most of the latitudes of the European and Siberian part, except the east of the latter and Kamtschatka. In their migrations they pass chiefly into the warmer parts of Europe, being very rare in England, but common on the coasts of France, Italy, and Sardinia. In the United States it appears to be generally rare. A few of the young birds are seen in this vicinity; and Wilson met with it in the interior on Seneca Lake, in October, and in February, at Louisville on the Ohio; and near the Big Bone Lick, in Kentucky.

GADWALL.

The Gadwall breeds in the woody districts of the remote northern fur countries of Canada. In the north of Europe they inhabit the vast rushy marshes; and in Holland, where they are common, they associate in the same places with the Wild Duck or Mallard. They nest in meadows and among rushes, laying eight or nine greenish gray eggs. They are very much esteemed as game, are very alert at diving and swimming, and plunging at the flash of the gun are obtained with difficulty. It is very timorous, lurking in the marshes by day, feeding only in the twilight of the morning and evening, and often till some time after night-fall; they are then heard flying in company with the Whistlers, and like these obey the call of the decoy Ducks. Their cry much resembles that of the common Wild Duck; nor is it more raucous or louder, though Gesner seems to have meant to characterize its note by applying the epithet *strepera*, which has been

adopted by succeeding ornithologists. Their food, consists of small fish, shelly mollusca, insects and aquatic plants.

THE AMERICAN WIDGEON.

This species, so nearly allied to the European Widgeon, has not been found in the old continent, yet it retires north to breed, inhabiting in summer the woody districts of the remote fur countries, near the Saskatchewan and the coasts of Hudson's Bay, as far as the 68th degree of northern latitude. In autumn and winter they are seen common in nearly all parts of the Union,

AMERICAN WIDGEON.

many wintering in North and South Carolina in the open rivers and bays, sometimes considerably inland. Indeed I have never seen them any where so numerous as in the Neuse river, round Newbern, forty miles from the ocean, where in company with the Canvas-Back and Buffel-Head, they are seen constantly in February and March. They are also numerous in Chesapeake Bay; and in the course of the winter extend their migrations as far as St. Domingo and other of the West India islands, as well as into Cayenne in the tropical parts of the continent. They are also observed in the interior of the United States, as on the Missouri, and probably other inland parts, where in the month of April, as well as on the sea coast, they are seen on their way to their northern breeding places to which they repair in May, on the thawing of the ice, and are then commonly associated by pairs. According to Hutchins their eggs are from six to eight; and they frequent the swamps, and feed much on insects.

The Widgeon, or Bald-Pate, is a frequent attendant on the Canvas-Back, and often profits by this association. The former, not being commonly in the habit of diving for subsistence, or merely from caprice, watches the motions of its industrious neighbor, and as soon as the Canvas-Back rises with the favorite root on which they both greedily feed, the Bald-Pate snatches the morsel and makes off with his booty. They are always very alert and lively, feeding and swimming out into the ponds and rivers at all hours of the day, but are extremely watchful, sheltering in coves and behind the land, and on the slightest attempt to steal upon them, immediately row out into

the stream beyond gun-shot, and then only take to wing when much disturbed.

THE SUMMER, OR WOOD DUCK.

SUMMER DUCK.

This most beautiful of Ducks seems to be dressed in a studied attire, to which the addition of a flowing crest adds a finish of peculiar elegance; and hence Linnæus has dignified the species with the title of *sponsa* or the bride. This splendid bird, according to Nuttall, is peculiar to America but extends its residence from the cold regions of Hudson's Bay in the 54th parallel to Mexico and the Antilles. Throughout a great part of this vast space, or at least as far south as Florida and the Mississippi territory, the Summer Duck is known to breed. In the interior they are also found in the State of Missouri, and along the woody borders and still streams which flow into most of the great north-western lakes of the St. Lawrence. The Summer Duck, so called from its constant residence in the United States, has indeed but little predilection for the sea coast, its favorite haunts being the solitary, deep, and still waters, ponds, woody lakes, and the mill dams in the interior, making its nest often in decayed and hollow trees impending over the water.

Though many migrate probably to the shores of the Mexican Gulf, numbers pass the winter in the States south of Virginia. Early in February they are seen associated by pairs on the inundated banks of the Alabama, and are frequent at the same season in the waters of West Florida. In Pennsylvania they usually nest late in April or early in May, choosing the hollow of some broken or decayed tree, and sometimes even constructing a rude nest of sticks in the forks of branches. The eggs twelve or thirteen are yellowish-white, rather less than those of the domestic Hen, and they are usually covered with down, probably plucked from the breast of the parent. The same tree is sometimes occupied, by the same pair, for several successive years, in the breeding season. The young, when hatched, are carried down in the bill of the female, and afterwards conducted by her to the nearest water. To these places, when once selected, if not disturbed, they sometimes show a strong predilection, and are not easily induced to forsake the premises, however invaded by noise and bustle. While the female is sitting, the male is usually perched on some adjoining limb of the same tree, keeping watch for their common safety. The species is scarcely ever gregarious, they are only seen in pairs or by families.

The Wood Duck has sometimes been tamed, and soon becomes familiar. They have even been so far domesticated as to run about at large in the barn yard like ordinary fowls. In France they have also been acclimated and tamed, and have bred in this condition.

THE AMERICAN TEAL.

The Green-Winged Teal, as a species, is common to the northern and temperate parts of both continents. The American bird appears to be a permanent and distinct variety. There is, according to Dr. Richardson, however, in the Hudson's Bay Museum, a specimen from the fur countries agreeing in all respects with the European species. Our variety is abundant to the extremity of the continent, both in the woody and barren districts of the remote fur countries of Hudson's Bay. It is also plentiful about Severn river, in the woods and plains near fresh waters, where it breeds, the young being about six or seven at a hatch. It feeds much upon fresh-water insects, seeds, and aquatic plants, and when fat is delicate food. In the autumn and winter it is very common throughout the waters of the United States, both in the interior and contiguous to the sea coast. In the course of the winter they retire as far south as Jamaica, and are probably common also along the coasts of the Mexican Gulf. It frequents ponds, marshes, the reedy shores of creeks and rivers, and in winter is very abundant in the rice plantations of the South. They usually fly in small parties, feeding mostly by night; associating with the Mallard, and are commonly decoyed by its call.

AMERICAN TEAL.

The Teal is found in the north of Europe as far as Greenland and Iceland, and it also inhabits the borders of the Caspian to the south. In France and England it is said to breed. They are commonly seen on the pools, in close companies of ten or twelve together, frequenting the rivers and unfrozen springs in winter, where they subsist on aquatic plants. They fly very swiftly, and utter a sort of whistling cry. The Teal breeds in the fens, continuing in the temperate parts of Europe the whole year. It conceals its nest among the bulrushes, constructing it of their stalks, and lining it with feathers; it rests also sometimes on the surface of the water, so as to rise and fall with the flood. The eggs are about ten or twelve, of a soiled white, indistinctly marked with brown spots. The female takes the whole man

agement of the incubation; the males, at this time, seem to leave them and associate for themselves in companies.

THE MUSK, OR MUSCOVY DUCK.

The Musk Duck derives its name from its exhaling at times a strong odor of that drug. The term Muscovy is wholly misapplied, since it is an exclusive native of the warmer and tropical parts of America and its islands. They exist wild in Brazil, Demerara, and the overflowed savannas of Guianna, and are occasionally seen along the coasts of the Mexican Gulf, in the lower part of Mississippi, and stragglers are frequently observed along the coasts of the warmer parts of the Union.

MUSCOVY DUCK.

They feed in the tropical savannas chiefly upon the seeds of some grasses which resemble, and are called, wild rice; flying in the morning to those immense and overflowed meadows to feed, and returning in the evening to their roosts near the sea. They are said to pass the warmer parts of the day indolently perched upon trees, which overhang the rivers and marshes, in the hollows of which, like our Wood Ducks, they construct their nest, and convey the young to the water as soon as they are hatched. They breed at all times of the year, and are very prolific, but many of the young fall victims to the Caymans and other predatory animals with which those countries are infested. The eggs are nearly quite round and of a greenish-white color. The male is very ardent and readily couples with the domestic Duck. In a wild state they are very shy and watchful and approached with difficulty.

The Musk Duck is now commonly domesticated, feeds and fattens well, is deservedly esteemed as food, more particularly the young, and though derived from the mildest of climates, endures the winter of the Eastern and Northern States without any difficulty or hardship. In the poultry-yard, like Turkeys, they have very singular and exciting antipathies. On such occasions both Ducks and Drakes shake their tails, stretch out their heads, and hiss and quack in a low tone with great affectation of anger and earnest. The male puffs and blows very much, but the whole one by one make their retreat before a small clucking Hen, who seems to view them with total indifference. Two males will also sometimes wage a very warm but harmless war in jealousy. In Virginia and North Carolina these domestic birds begin to lay as early as February.

THE VELVET DUCK.

The Velvet Duck is common to the northern regions of both continents, where it retires late in the spring to pass the period of reproduction. Like the preceding, they live principally upon the sea and its productions, diving often in broken water for shell-fish and other marine bodies. They breed along the Arctic coasts and around Hudson's Bay and Labrador, retiring inland for the purpose; nesting contiguous to small fresh-water pools in the shelter of Juniper or Pine bushes, laying from eight to ten white eggs, which the female closely covers with her elastic feather. The young are attended by the female only, who remains with her brood in these seclusions until they are nearly ready to fly. She also makes a show of defending them, and the young themselves often, by their great alertness in diving, escape the attacks of their enemies. They are abundant in the Orkneys and Hebrides, as well as in Norway, Sweden, Lapland; and are common in some parts of Siberia and Kamtschatka. Near Kingis, on the banks of the Tornea in Lapland, a little beyond the 67th parallel, Skiöldebrand remarked them nesting in trees, particularly Pines, accompanied by the Golden Eye (*Fuligula cangula.*) The inhabitants, he also adds, knowing the trouble they have in forming their nests, attach hollowed pieces of wood to the trees for their convenience; and in recompense receive a quantity of their eggs, which supply the place of those of the common fowl, no longer found to endure the severity of these hyperboreal climates.

VELVET DUCK.

CANVASS-BACKED DUCK.

The Canvass-Back, so well known as a delicacy of the table, is a species peculiar to the continent of America. It breeds, according to Richardson, in all parts of the remote fur countries from the 50th

parallel to their most northern limits, and at this period associates much on the water with the ordinary tribe of Ducks. After the close of the period of reproduction, accumulating in flocks, and driven to the open waters of the south for their favorite means of subsistence, they arrive about the middle of October seawards on the coast of the United States. A few at this time visit the Hudson and the Delaware, but the great body of emigrants take up their quarters in the Bay of Chesapeake, and in the numerous estuaries and principal rivers which empty into it; particularly the Susquehanna, the Patapsco, Potomac and James' rivers. They also frequent the sounds and bays of North Carolina, and are abundant in the river Neuse, in the vicinity of Newbern, and probably in most of the other southern waters to the coast of the Gulf of Mexico, being seen in winter in the mild climate of New Orleans. In these different sections of the Union they are known by the various names of Canvass-Backs, White-Backs, and Sheldrakes. In the depth of winter, a few pairs, probably driven from the interior by cold, arrive in Massachusetts Bay, in the vicinity of Cohasset and near Martha's Vineyard: these, as in the waters of New York, are commonly associated with the Red-Head, or Pochard, to which they have so near an affinity. Their principal food, instead of the fresh-water plant *Valisneria*, which is confined to so small a space, is, in fact, the different kinds of Sea-Wrack, known here by the name of Eelgrass, from its prodigious length, (*Zostera marina*, and *Ruppia maritima*.) These vegetables are found in nearly every part of the Atlantic, growing like submerged fields over all the muddy flats, shallow bays, estuaries, and inlets, subject to the access of salt or brackish waters. They are the marine pastures in which most of the Sea Ducks, no less than the present, find at all times, except in severe frosts, an ample supply of food.

CANVASS-BACKED DUCK.

The Canvass-Backs on their first arrival are generally lean, but by the beginning of November, they become in good order for the table. They are excellent divers, and swim with speed and agility. They sometimes assemble by thousands in a flock, and rising suddenly on wing produce a noise like thunder. During the day, they are commonly dispersed about in quest of food, but towards evening collect together, and coming into the creeks and river inlets, ride as it

were at anchor, with their heads under their wings asleep; sentinels, however, appear awake and ready to raise an alarm on the least appearance of danger. At other times they are seen swimming about the shoals, and diving after the sea-wrack, which they commonly pluck up, and select only the tenderest portion towards the root. Though thus laboriously engaged, they are still extremely shy, and can rarely be approached but by stratagem, for even while feeding, several remain unemployed and vigilant against any surprise. When wounded in the wing they dive to prodigious distances, and with such rapidity, and perseverance as almost to render the pursuit hopeless. The great demand and high estimation in which these Ducks are held, spurs the ingenuity of the gunner to practise every expedient which may promise success in their capture. They are sometimes decoyed to shore or within gun-shot by means of a dog trained for the purpose, which, playing backwards and forwards along the shore, attracts the vacant curiosity of the birds, and as they approach within a suitable distance the concealed fowler rakes them first on the water, and afterwards as they rise. Sometimes by moonlight the sportsman directs his skiff towards a flock, whose position he had previously ascertained, and keeping within the projecting shadow of some wood, bank, or headland, he paddles silently along to within fifteen or twenty yards of a flock of many thousands, among whom he consequently makes great destruction.

As the severity of the winter augments, and the rivers become extensively frozen, the Canvass-Backs retreat towards the ocean, and are then seen in the shallow bays which still remain open; occasionally also frequenting the air-holes in the ice, and openings which are sometimes made for the purpose, immediately over the beds of sea grass, to entice them within gun-shot of the hut or bush fixed at a convenient distance for commanding the hungry flocks. So urgent sometimes are the Ducks for food in winter, that at one of these artificial openings in the ice, in James' river, a Mr. Hill, according to Wilson, accompanied by a second person, picked up from one of these decoys, at three rounds each, no less than eighty-eight Canvass-Backs. The Ducks crowded to the place, so that the whole open space was not only covered with them, but vast numbers, waiting their turn, stood inactive on the ice around it.

THE HARLEQUIN DUCK.

This singularly marked and beautiful species is almost a constant resident of the hyperboreal regions of the northern hemisphere, from which it migrates but short distances towards more temperate latitudes, and is as in Europe a rare and almost accidental visiter as far as the Middle States of the Union. It is however more frequent in Eastern Europe up to Greenland; and common from lake Baikal to Kamschatka. Now and then it is killed in Scotland and the Orkneys. Dr. Richardson found it to be a rare bird in the fur countries, haunting eddies under cascades, and rapid streams, where it dwells and

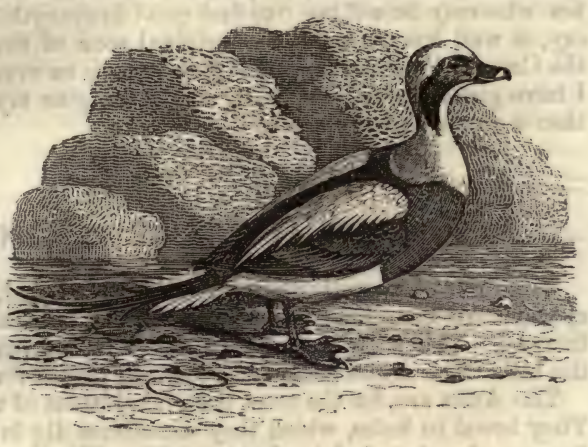
breeds apart from all other Ducks. In Kamschatka it affects the same retired and remarkable romantic situations; like the alpine Cinclus, it seeks out the most rocky and agitated torrents; in such situations it has been seen in the rivulets of Hudson's Bay, as much as ninety miles inland from the sea; here it seeks out its appropriate fare of spawn, shell-fish, and the larvæ of aquatic or fluviatile insects. On the low bushy and shady banks of these streams it constructs its nest, which contains from twelve to fourteen pure white eggs. On the margins of fresh-water ponds in Labrador Mr. Audubon also observed this species, and he remarks, that instead of rearing their young in the same situations chosen for breeding, as with the Velvet and Surf Duck, it conducts its brood to the sea as soon as they are hatched. Its flight is high and swift; and it swims and dives with the utmost dexterity. So great is its confidence in the security of its most natural element, that on the report of a gun over the water, it instantly quits its flight and dives at once with the celerity of thought. It is said to be clamorous, and that its voice is a sort of whistle; the anatomy of the trachea is however, unknown, and it is not said whether this sibilation be really produced from the throat or the wings, as is the latter case in the Common Clangula or Golden Eye. Driven from their solitary resorts in the interior by the invasion of frost, they are now seen out at sea engaged in obtaining a different mode of subsistence. Amidst these icy barriers they still continue to endure the rigors of winter, continually receding further out to sea, or making limited and almost accidental visits to milder regions. When discovered, they display the utmost vigilance, and instantly take to wing. It is considered to be a game superior in flavor to the Common Wild Duck. From the singular and beautiful crescent-shaped lines and marks which ornament its neck and breast it has probably come by the dignified appellation of *lord*, among the fishers of Newfoundland. It is here too rare to have acquired any particular name.

HARLEQUIN DUCK.

THE LONG-TAILED DUCK.

This elegant and noisy Duck, known so generally in the Southern States by the nickname of "South-Southerly," from its note, and, in most other parts by the appellation of "Old Squaws" or "Old Wives," is an Arctic inhabitant of both continents, and abounds in the glacial

seas of America, where it is seen commonly associated with the Eider, Surf, Black and other Ducks of congenial habits, who invariably prefer the frail but, to them, productive dominion of the sea to the land or its more peaceful waters. So strong is the predilection of this species for its frigid natal climes and their icy barriers, says Nuttall, that it is seen to linger in the north as long as the existence of any open water can be ascertained; when the critical moment of departure at length approaches, common wants and general feeling begin so far to prevail as to unite the scattered families into numerous flocks. They now proceed towards the south, and making a halt on the shores and inland lakes round Hudson's Bay, remain until again reluctantly driven towards milder climes. They are the last birds of passage that take leave of the fur countries. Familiar with cold, and only driven to migrate for food, in the latter end of August when already a thin crust of ice is seen forming in the night over the still surface of the Arctic Sea, the female Harelda is observed ingeniously breaking away with her wings for the egress of her young brood.



LONG-TAILED DUCK.

According to the state of the weather we consequently observe the variable arrival of these birds. In October they generally pay us a visit, the old already clad in the more dazzling garb of winter. The young sometimes seek out the shelter of the fresh water ponds, but the old keep out at sea. No place in the Union so abounds with these gabblers as the Bay of Chesapeake. They are lively, restless and gregarious in all their movements, and fly, dive and swim with unrivalled dexterity; and subsist chiefly upon small shell-fish, and marine plants, particularly the *Zostera* or Grass-wrack. Late in the evening, or early in the morning, towards spring more particularly, vast flocks are seen in the bays and sheltered inlets, and in calm and foggy weather we hear the loud and blended nasal call, reiterated for hours from the motley multitude. There is something in the sound like the honk of the Goose, and, as far as words can express a subject so uncouth, it resembles the gutteral syllables, *'ogh ough egh*, and then *'ogh ogh ogh ough egh*, given in a ludicrous drawling tone; but still with all the accompaniments of scene and season, this humble harbinger of spring, obeying the feelings of nature, and pouring forth his final ditty before his departure to the distant north, conspires with

the novelty of the call, to please rather than disgust those happy few who may be willing "to find good in everything." This peculiar cry, is well known to the aboriginal sons of the forest, and among the Crees the species is called '*Hah-ha-way,* so much like the syllables I have given above, that many might imagine my additions no more than a version of the same.

OF THE AUK TRIBE IN GENERAL.

THE bills of these birds are thick, convex, and, except in very few species, are compressed at the sides, and crossed with transverse furrows. The nostrils are linear, and situated parallel to the edge of the bill. The Auks have three toes, all placed forward.

The Auks are, for the most part, inhabitants of the Northern Ocean. They breed in holes, which they sometimes dig in the earth, or in the fissures of rocks; and lay but one egg. They generally rest in these holes during the night. Their feet are placed behind the centre of gravity, which makes some of the species stand with their heads almost upright.

THE GREAT AUK.

The Great Auk is an inhabitant of the Arctic Circle, but is sometimes seen in the northern islands of Scotland. The wings of this bird are incapable of raising it into the air, but serve admirably as paddles when diving. It breeds principally on the shores of Iceland and Spitzbergen, laying one large egg on a cleft of a high rock. The eggs are extremely scarce, and fetch a very high price among collectors, a circumstance which has caused some most ingenious impositions. In one case two of these

GREAT AUK.

eggs were offered for sale at a shop where natural curiosities are bought and sold. They were offered, I believe, at five pounds each, which being a very low price, excited the suspicions of the buyer, who asked the seller to leave them while he examined them. He examined them accordingly, and although he doubted, yet they looked very genuine indeed. They had the peculiar smell of the Auk's eggs, the hole through which the contents were extracted was perfectly natural, the lining membrane of the egg being still in its place. Just as the price was about to be paid, a visitor happened to enter the shop, who recognised the seller as a man who had sold many of these eggs of late at the same price, but who manufactured all the eggs himself. They were, in fact, nothing but models, exquisitely copied, and accurate in every particular, but yet only a composition of plaster of Paris with other ingredients.

The length of the bird is nearly three feet.

THE PUFFIN AUK.

This bird is about twelve inches in length. The bill is an inch and a quarter long, much compressed at the sides; and nearly an inch and a half deep at the base, whence both mandibles tend to a point, which is a little curved: across these there are oblique furrows: the half of the bill next to the point is red; and that next to the base blue-gray. The top of the head, the hind part of the neck, and all the upper parts of the plumage, are black, which color passes also round the throat like a collar. The sides of the head, the chin, and all the under parts are white. The legs are orange.

THE PUFFIN AUK.

The Puffin Auks appear in some parts of England about the beginning of April. Their first employment is the forming of burrows for their young-ones, in the earth or sand. This is the task of the males, who are so intent on the business, as to suffer themselves at that time to be taken with the hand. Some, where there is opportunity, save themselves the trouble of forming holes, by dispossessing Rabbits of theirs.

The females lay one white egg each; and the males as well as

females perform the office of sitting, relieving each other when they go to feed. The young-ones are hatched in the beginning of July. The noise they make when with their young, is a singular kind of humming, much resembling that produced by the large wheels used for the spinning of worsted. On being seized, they emitted this noise with greater violence; and from its being interrupted by their struggling to escape, it sounded not much unlike the efforts of a dumb man to speak.

PUFFIN AUK.

The young-ones are entirely covered with a long blackish down; and, in shape, are altogether so different from the parent birds that no one would at first sight suppose them of the same species. Their bill also is long, pointed, and black, with scarcely any marks of furrows.

The Kamtschadales and Keriles wear the bills of Puffins fastened about their necks with straps. The priests put them on with certain ceremonies, and the persons are supposed to be always attended with good fortune, so long as they retain them there.

It appears certain, that Puffins do not breed till their third year.

THE LITTLE AUK, OR SEA DOVE.

This neat and singular little bird, with a quaint resemblance to the Colombine tribe, is known to mariners by the name of the Greenland Dove; and in this vicinity it is also called the Pigeon Diver. It inhabits, however, a region where the gentle cooing of the Dove is never heard. It dwells far within the Arctic circle, approaching the very pole, having been obtained by Dr. Richardson from the dreary coast of Melville Island, in the latitude of 75° and 76°, in August, where they were seen by thousands. It is probably almost the last bird seen within the desolate and glacial boundaries of the earth. In Greenland and Spitzbergen they congregate in great flocks; and in the depth of winter, watching the motion of the ice in the offing, when it is

THE LITTLE AUK.

broken up by storms, they crowd by thousands into every opening fissure or flaw, in order to snatch up the marine productions on which they subsist. Mr. Audubon found a few breeding on the coast of Labrador. In Newfoundland they are called the Ice-Bird, being the sure harbingers of severe weather, as they seldom proceed far from their inclement natal regions, except when accidentally driven to shore by storms. In the United States their appearance is always solitary, being mere wanderers, as they are also along the milder coasts of Europe. Their uniform predilection is for the hyperboreal regions of their nativity, and they even fatten in storms when not overwhelmed by their fury; as, at these times the small crustacea, and marine insects on which they feed are cast up and brought to the surface in great abundance. At times they appear to fly well, as appears by their extensive accidental migrations, having sometimes been met with considerably inland. The water, however, being their more natural element, they dive with great facility, and are often observed dipping their bills into the water as if drinking.

SEA DOVE.

Those which have been obtained in the vicinity of Boston, usually in the depth of winter, have sometimes been found in Fresh Pond, and so lean and exhausted, by buffeting weather and fatigue, as to allow themselves to be quietly taken up by the hand.

THE PARROQUET AUK.

This bird is about the size of a blackbird. The bill is much compressed, and convex both above and beneath. The nostrils are placed in the middle of it, and pervious, and above these there is a furrow that reaches from the base to the middle. The color of the bill is deep red. From the hinder part of the eye springs a slender tuft of white feathers, which hangs loosely on the neck. The upper parts of the plumage, and the neck, are black; and the under parts, from the breast, white. The wings are short. The legs are of a dirty yellow, and the webs of the feet brown.

This species of Auk is found in flocks in Kamtschatka, in the isles towards Japan, and on the western shores of America. In the nights they harbour in the crevices of rocks. Like most of the tribe, they

are indolent and stupid birds, as the following extraordinary method of catching them sufficiently proves: One of the natives places himself in the evening among the rocks, under a loose garment of fur, of a particular shape, with large open sleeves, when the birds, returning to their lodging-places at dusk, run under the skirts and up the arm-holes, in order to shelter themselves during the night; the man concealed beneath, kills them as fast as they enter, and, by this means, as many are often taken in one evening as he can carry away. Their stupidity likewise occasions them very often to fly on board ships at such times, mistaking these for roosting places: by which navigators have sometimes been taught to avoid the danger of approaching too near the land, either in the evenings, or on the approach of storms.

PARROQUET AUK.

THE RAZOR-BILL AUK.

RAZOR-BILL AUK.

The Razor-bill Auk abounds among the cliffs of England. It lays, sits, and breeds up its young, on the ledges of the craggy cliffs and steep rocks by the sea shore. On the coast of Labrador they abound, and the thousands of birds there killed for the sake of the breast feathers, which are very warm and elastic, and the quantities of eggs there collected, amount to almost incredible numbers. The summer and winter dress of the

Razor-bill, though different, do not vary so remarkably as the plumage of many other birds. In the summer dress, the white streak which goes from the bill to the eyes, becomes very pure; and the cheeks, throat, and upper part of the front of the neck are of a deep black, shaded with red. In winter the throat and forepart of the neck are white.

OF THE PENGUINS IN GENERAL.

THEIR bill is strong, straight, furrowed at the sides, and bent towards the point. The nostrils are linear, and placed in the furrows. The tongue is covered with strong spines, pointing backward. The wings are small, not unlike fins, and are covered with feathers no longer than those of the rest of the body. The body is clothed with thick short feathers; which have broad shafts, and are placed almost as compactly as scales. The legs are short and thick, situated backwards, near the tail. The toes are four, all placed forward; the interior ones are loose, and the rest webbed. The tail is very stiff, consisting of broad shafts scarcely webbed.

PENGUIN.

The Penguins seem to hold the same place in the southern parts of the world, that the Auks do in the northern. They resemble these birds in almost all their habits: they walk erect, and are very stupid. They also resemble them in color, and in their mode of feeding, and of making their nests. From the extreme shortness of their wings, they are altogether incapable of flying. They swim with great swiftness; and are fortified against the effects of a long continuance in the cold water, by an abundance of fat. They hatch their young-ones in an erect position; and cackle like Geese, but in a hoarser tone.

THE CRESTED PENGUIN.

The Crested Penguins are inhabitants of several of the South Sea Islands. They have the names of Hopping Penguins, and Jumping Jacks, from their action of leaping quite out of the water, sometimes to the height of three or four feet, on meeting with any obstacle in their course. All the Penguins, while swimming, sink above the breast, the head and neck only appearing out of the water; and they row themselves along with their finny wings as with oars.

This species have a greater air of liveliness in their countenance than almost any of the others: yet they are very stupid birds, and so regardless of their own safety, as even to suffer any person to lay hold of them. When provoked, they erect their crest in a very beautiful

manner; and we are told, that, when attacked by our voyagers, they ran at them in flocks, pecked their legs, and spoiled their clothes. "When the whole herd was beset, (says Mr. Forster, in his account of one of the South Sea islands,) they all became very bold at once; and ran violently at us, biting our legs, or any part of our clothes."

CRESTED PENGUIN.

Their sleep is extremely sound; for Dr. Sparrman accidentally stumbling over one of them, kicked it several yards without disturbing its rest; nor was it until after being repeatedly shaken that the bird awoke. They are very tenacious of life. Mr. Forster left a great number of them, apparently lifeless from the blows they had received, while he went in pursuit of others; but they all afterwards got up and marched off with the utmost gravity.

These birds form their nests among those of the Pelicans, and live in tolerable harmony with them. The female generally lays only a single egg. Their nests are holes in the earth; which they easily form by means of their bills, throwing back the dirt with their feet. They are often found in great numbers on the shores where they have been bred.

OF THE PETREL TRIBE IN GENERAL.

THE bill is somewhat compressed; the mandibles are equal in length, and the upper one is hooked at the point. The nostrils form a kind of truncated cylinder, lying over the base of the bill. The feet are webbed, and, in the place of a hind toe, have a spur pointing downwards.

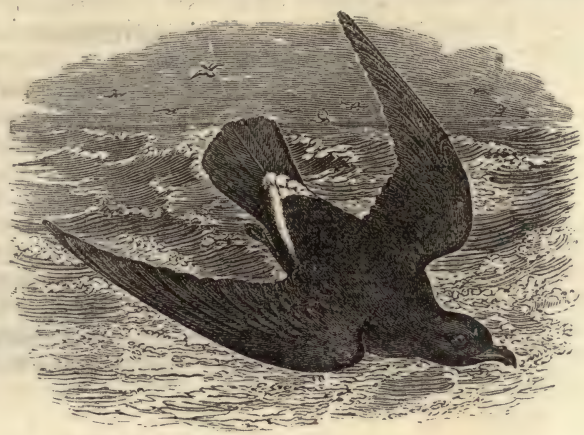
These birds frequent only the ocean, and are seldom to be seen on shore, except during the breeding season. Their legs are bare of feathers a little above the knee. They have the singular faculty of spouting from their bills, to a considerable distance, a large quantity of pure oil; which they do, by way of defence, into the face of any one that attempts to annoy them. This oil has been frequently used in medicine, and, some writers say, with success.

THE STORMY PETREL, AND NORFOLK ISLAND PETREL.

The Stormy Petrel is not larger than a swallow; and its color is entirely black, except the coverts of the tail, the tail itself, and the vent feathers, which are white. Its legs are long and slender.

The length of the Norfolk Island Petrel is about sixteen inches.

The bill is about an inch and a half long, black and much hooked at the end. The head as far as the eyes, and the chin, are mottled in waves of brown and white: the rest of the body is of a sooty brown above, and a deep ash-color beneath. The wings, when closed, exceed the tail by an inch. The legs are of a pale yellow, and part of the toes and webs is black.



STORMY PETREL.

Ranging over the expanse of the ocean, and frequently at a vast distance from land, the former of these birds is enabled to brave the utmost fury of the storms. Even in the most tempestuous weather it is frequently observed by the mariners, skimming with almost incredible velocity, along the hollows of the waves, and sometimes over their summits. It often follows vessels, in great flocks, to pick up any thing that is thrown overboard; but its appearance is always looked upon by the sailors as the sure presage of stormy weather in the course of a few hours after. It seems to seek for protection from the fury of the wind in the wake of the vessels; and from the same reason it very probably is, that it often flies along between two surges.

The nests of these birds are found in the Orkney Islands, under loose stones, in the months of June and July. The Stormy Petrels live chiefly on small fish, and, although mute by day, are very clamorous during the night.

The inhabitants of the Feroe Islands are said to draw a wick through the bird, which, being lighted at one end, serves for a candle, the flame being fed by the fat and oil of the body.

The other species of Petrel here mentioned are found in great numbers in Norfolk Island, where they burrow in the sand like Rabbits. On Mount Pit, the highest land in the island, the ground was as full of holes as a Rabbit-warren, and an immense number of aquatic birds burrowed and built their nests in them. These, during the day, were at sea; but as night approached they returned in vast flocks. The settlers lighted small fires every night on this mount, around which the birds dropped as fast as the people could pick them up and kill them; for the wings of many sea-birds are so long as to prevent their rising till they can ascend some small elevation. Hunter says that eighteen thousand birds of different species were killed in the space of about six weeks.

THE COMMON GUILLEMOT.

COMMON GUILLEMOT.

The Common Guillemot makes its appearance on our coasts in the beginning of spring, and inhabits the cliffs overhanging the sea. Each female deposits one egg on a naked ledge of rock, and sits upon it with great perseverance, even suffering itself to be taken by hand. The egg is usually a pale green, streaked and blotched with brown, but is very variable both in color and markings. The length of the bird is fifteen inches.

THE FULMAR PETREL.

The Fulmar Petrel is an inhabitant of the Arctic circle, but breeds abundantly in St. Kilda and the Orkneys. The inhabitants of those islands consider the Fulmar as one of their principal means of subsistence, and to obtain the birds they expose themselves to the greatest dangers. The feathers of the Fulmar Petrel are used for their beds, its flesh they eat, its oil is delicate and gives an excellent light when used in a lamp, besides which it is considered a good remedy for wounds. To obtain the birds, the inhabitants wait until they are nearly fledged, when they lower themselves down the face of the most fearful precipices, saved from destruction merely by a rope. This rope is one of the principal items of the property of the people who live in the Orkneys. It is sometimes made of hide, but the best ropes are woven of hair, and are found to be less liable to fray against the rocks than if they were made of any other material. There are many stories of the dangers encountered by the daring cragsman, but there is no space for their insertion.

FULMAR PETREL.

The Fulmar Petrel lays one white egg, large and brittle, which is imbued with the peculiar oily odor that characterises the bird. The food of the Fulmar consists of the flesh and blubber of dead whales and other cetacea, and also of molluscs and crustacea. The length of the bird is sixteen inches.

OF THE ALBATROSS TRIBE.

THERE are but four species of Albatross; of which three are found principally in the seas of hot climates, and the fourth is confined to those within the Antarctic Circle. Their bill is straight: the upper mandible hooked at the point; and the lower truncated, or appearing as if cut off. The nostrils are oval, wide, prominent, and lateral; the tongue is very small; and the feet have each three toes, all placed forward.

THE WANDERING ALBATROSS, OR MAN-OF-WAR BIRD.

In size these birds are sometimes as large as a Swan. Their general color is white, the upper parts are marked with black lines. The quill-feathers are black; and the tail is rounded, and of a lead color. The bill is of a pale yellow, and the legs are flesh-colored.

WANDERING ALBATROSS.

These birds are found in most seas, but chiefly in those within the Tropics: they are, however, often seen about the Cape of Good Hope; and, towards the end of July, they collect in great numbers in Kamtschatka, and the seas which separate that part of Asia from America.

They are exceedingly voracious, and feed on various species of fish and molluscæ. The shoals of flying-fish, when persecuted by their enemies of the deep, make their appearance for a short flight in the air, and suffer greatly from the voracity of these birds. They also often pursue the shoals of salmon into the mouths of large rivers; and

so gorge themselves as, notwithstanding their otherwise extraordinary powers of flight, to be prevented by their weight and consequent stupidity even from rising.

In the West Indies the appearance of these birds is said to foretell the arrival of ships; this indeed is sometimes true, and arises from a very natural cause. They always fish in fine weather; so that when the wind is boisterous out at sea, they retire into the harbors, where they are protected by the land; and the same wind that blows them in, oftentimes brings also vessels to seek a retreat from the storm.

Their voice very much resembles the braying of an Ass. In South America they build their nests about the end of September; these are formed of earth, on the ground, and are from one to three feet high. The eggs are as large as those of a goose, and have the singular property of their white not becoming hard by boiling. When attempted to be seized, these birds make a vigorous defence with their bills.

Many of the Indians set a high value on the feathers of these birds; which they use for arrows, as they last much longer than those of any other birds. The natives of the South Sea Islands watch the arrival of the Man-of-war Birds at the rainy season; and, when they observe them, they launch from their canoes into the water a light float of wood, baited with a small fish. When one of the birds approaches it, a man stands ready with a pole, about eighteen feet in length; and on its pouncing, he strikes at the bird, and seldom fails of bringing it down. If, however, he miss his aim, he must wait for some other bird, for that will no more be tempted to approach. The cock birds are reckoned the most valuable; and sometimes even a large hog is given in exchange for one of these.

The inhabitants of Kamtschatka make buoys to their nets, of the intestines of the Man-of-war Birds, which they blow up like bladders. They also make tobacco-pipes and needle-cases of the bones of the wings; and use them likewise for heckling the grass, which serves them instead of flax. The flesh is very hard and dry.

THE PELICAN TRIBE IN GENERAL.

In this tribe the bill is long and straight; and the end either hooked, or sloping. The nostrils are placed in a furrow that runs along the sides of the bill, and, in most of the species, they are scarcely perceptible. The face, except in two species, is destitute of feathers. The gullet is naked, and capable of great extension. The number of toes is four, and these are all webbed together.

The Pelicans are gregarious; and, in general remarkable for their extreme voracity. They are very expert in seizing fish with their long and apparently unwieldy bills; and many of the species are rendered of use to mankind, by being trained to fishing. In general, they keep out far at sea; but some of them are found occasionally in the interior parts of continents.

THE WHITE, OR GREAT PELICAN.

This Pelican, when full grown, is larger than a Swan. The bill is about sixteen inches long; and the skin between the sides of the lower mandible is very flaccid and dilatable, extending eight or nine inches down the neck. This skin is bare of feathers, and is capable of containing many quarts of water. The tongue is so small as scarcely to be distinguishable. The sides of the head are naked; and on the back of the head there is a kind of crest. The whole plumage is whitish, suffused with a pale blush color; except some parts of the wings, which are black. The legs are lead-colored, and the claws gray.

WHITE PELICAN.

The bag in the lower mandible of the bill of this bird, is one of the most remarkable members that is found in the structure of any animal. Though it wrinkles up nearly into the hollow of the chap, and the sides to which it is attached, are not (in a quiescent state) above an inch asunder, it may be extended to an amazing capacity; and when the bird has fished with success, its size is almost incredible. It will contain a man's head with the greatest ease; and, it has been said, that even a man's leg, with a boot on, has been hidden in one of these pouches. In fishing, the Pelican fills this bag, and does not immediately swallow his prey; but when the bag is full, he returns to the shore to devour at leisure the fruits of his industry. He is not long in digesting his food; for he has generally to fish more than once in the course of a day.

At night, when the toils of the day are over, these birds, which are lazy and indolent when they have glutted themselves with fish, retire a little way on the shore to take their rest for the night. Their attitude in that state is with their head resting against the breast. They remain almost motionless till hunger calls them to break off their repose: thus they pass nearly the whole of their life in eating and sleeping. When thus incited to exertion, they fly from the spot, and, raising themselves thirty or forty feet above the surface of the sea, turn their head with one eye downward, and continue to fly in that position till they see a fish sufficiently near the surface. They

then dart down with astonishing swiftness, seize it with unerring certainty, and store it in their pouch. Having done this, they rise again, and continue the same actions till they have procured a competent stock.

Whence it was that the ancients attributed to this stupid bird the admirable qualities and parental affections for which it was celebrated amongst them, I am unable to imagine; unless, struck with its extraordinary figure, they were desirous of supplying it with propensities equally extraordinary. For, in truth, the Pelican is one of the most heavy, sluggish, and voracious, of all the feathered tribes; and is but ill-fitted to take those vast flights, or to make those cautious provisions, which have been mentioned.

It is, however, by no means destitute of natural affection, either towards its young-ones, or towards others of its own species. Clavigero, in his History of Mexico, says, that sometimes the Americans, in order to procure, without trouble, a supply of fish, cruelly break the wing of a live Pelican, and, after tying the bird to a tree, conceal themselves near the place. The screams of the miserable bird attract other Pelicans to the place, which, he assures us, eject a portion of the provisions from their pouches, for their imprisoned companion. As soon as the men observe this, they rush to the spot, and, after leaving a small quantity for the bird, carry off the remainder.

PELICANS FISHING.

The female feeds her young-ones with fish macerated for some time in her bag. Labat informs us, that he caught two Pelicans, when very young, and tied them by the leg to a post stuck into the ground; and he had the pleasure of seeing one of the old ones come for several days to feed them, remaining with them the greatest part of the day, and passing the night on the branch of a tree that hung over them. By this means they all three became so familiar as to suffer themselves to be handled; and the young-ones always took the fish that he offered to them, storing it first in their bag, and then swallowing it at leisure.

The Pelican has often been rendered domestic; and this writer assures us, that he saw one among the Americans so well trained, that it would, at command, go off in the morning, and return before

night, having its pouch distended with prey; part of which it was made to disgorge, and the rest it was permitted to retain for its trouble.

According to the account of Faber, a Pelican was kept in the court of the Duke of Bavaria above forty years. He says that it seemed fond of being in the company of mankind; and that when any one sang or played on an instrument, it would stand perfectly still, turn its ear to the place, and, with its head stretched out, would seem to pay the utmost attention. We are told that the Emperor Maximilian had a tame Pelican that lived more than eighty years, and always attended his soldiers when on their marches. M. de Saint Pierre mentions his having seen, at Cape Town, a large Pelican playing with a great dog, whose head she often, in her frolic, took into her enormous beak.

When a number of Pelicans and Corvorants are together, they are said to have a very singular method of taking fish. They arrange themselves in a large circle, at some distance from land: and the Pelicans flap with their extensive wings above, on the surface, while the Corvorants dive beneath: hence the fish contained within the circle are driven before them toward the land; and as the circle lessens by the birds coming close together, the fish at last are brought into a small compass, when their pursuers find no difficulty in filling their bellies. In this exercise they are often attended by various species of gulls, which likewise obtain a share of the spoil.

THE FRIGATE PELICAN.

The Frigate Pelican, or Man-of-war Bird is chiefly seen on the tropical seas, and generally on the wing. They are abundant in the Island of Ascension, India, Ceylon and China. In the South Sea they are seen about the Marquesas, Easter Isles and New Caledonia, also at Otaheite. Dampier saw them in great plenty in the island of Aves in the West Indies, and they are common off the coast of East Florida, particularly around the reefs or keys, often assembled in flocks of from fifty to a thousand. They are also not uncommon, during summer, along the coasts of the Union as far as South Carolina, and breed in various places, retiring to warmer latitudes on the approach of cool weather.

The Frigate Bird is often seen smoothly gliding through the air, with the motions of a Kite, from one to two hundred leagues from the land, sustaining these vast flights with the greatest apparent ease, sometimes soaring so high as to be scarcely visible, at others approaching the surface of the sea, where, hovering at some distance, it at length espies a fish, and darts upon it with the utmost rapidity, and generally with success, flying upwards again, as quick as it descended. In the same manner it also attacks the Boobies and other marine birds which it obliges to relinquish their prey.

They breed abundantly in the Bahamas, and are said to make their

nests on trees, if near: at other times they lay on the rocks; the eggs one or two, are of a flesh color, marked with crimson spots. The young birds covered with a greyish-white down, are assiduously attended by the parents who are then tame, and easily approached. When alarmed, like Gulls, they as readily cast up the contents of their pouch, as these birds do of the stomach. The general plumage is brownish-black, with violet reflections, except the wing coverts which have a rufous tinge.

FRIGATE PELICAN.

THE CORVORANT.

These birds are common on many of our sea-coasts. They build their nests on the highest parts of the cliffs, that hang over the sea; and lay three or more pale green eggs, about the size of those of a Goose. In winter they disperse along the shores, and visit the fresh waters, where they commit great depredations among the fish. They are remarkably voracious; having a most rapid digestion, promoted perhaps, by an infinite number of small worms which fill their intestines. They are very wary, except when they have filled their stomach; but in this case they sometimes become so stupid, that it is easy to take them in a net, or even by means of a noose thrown over their heads.

Their smell when alive, is excessively rank and disagreeable; and their flesh is so disgusting, that even the Greenlanders, among whom they are very common, will scarcely eat them.

It is no uncommon thing to see, on the rocks of the sea-coast, twenty of these birds together, with extended wings, drying themselves in the wind; in this position they remain sometimes nearly an hour, without once closing their wings, and, as soon as these are suf-

ficiently dry to enable the feathers to imbibe the oil, they press this substance from the receptacle on their rumps, and dress the feathers with it. It is only in one particular state that the oily matter can be spread on them; when they are somewhat damp; and the instinct of the birds teaches them the proper moment.

The skins of Corvorants are very tough; and are used by the Greenlanders, when sewed together and put into proper form, for garments. And the skin of the jaws serves that people for bladders to buoy up their smaller kinds of fishing darts.

CORVORANT.

THE GANNET OR SOLAN GOOSE.

These birds are insatiably voracious, and yet they are somewhat particular in their choice of prey; disdaining, unless in great want, to eat any food worse than Herring or Mackerel. No fewer than one hundred thousand Gannets are supposed to frequent the rocks of St. Kilda: and of these, including the young-ones, at least twenty thousand are annually

GANNET.

killed by the inhabitants for food. Allowing that the birds remain in this part of the country about six months in the year, and that each bird destroys five Herrings in a day, which is considerably less than the average, we have at least ninety millions of the finest fishes in the world annually devoured by a single species of Saint Kilda Birds.

The Gannets frequent nearly all the Hebrides, and are sometimes seen on the Cornish Coast; but they seldom occur in any other parts of Europe. They are migratory; and first appear in the above islands about the month of March: they remain till August or September.

They build their nest on the highest and steepest rocks they can find near the sea; laying, if undisturbed only one egg in the year; but if that be taken away, they will lay another, and if that be also taken, a third, but never more in the same season. The egg is white, and is rather smaller than that of the Goose. The nests are composed of grass, sea plants, or any refuse fitted for the purpose, that the birds find floating on the water. The young Gannets, during the first year, differ greatly from the old ones; for they are of a dusky hue, and speckled with numerous triangular white spots. While the female is employed in incubation, the male supplies her with food; and the young birds, with their bill as a pincer, take their food from the pouch of the parent.

VISITING THE NESTS OF THE GANNET.

These birds, when they pass from place to place, unite in small flocks of from five to fifteen; and, except in very fine weather, they fly low, near the shore, but never pass over it; doubling the capes and projecting parts, and keeping at nearly an equal distance from the land. During their fishing they rise high into the air, and sail aloft over the shoals of Herrings or Pilchards, much in the manner of Kites. When they observe the shoal crowded thick together, they close their wings to their sides, and precipitate themselves, head foremost into

the water, dropping almost like a stone. Their eye in this act is so correct, that they never fail to rise with a fish in their mouth.

Mr. Pennant says, that the natives of Saint Kilda hold these birds in much estimation, and often undergo the greatest risks to obtain them. Where it is possible, they climb up the rocks which they frequent, and in doing this they pass along paths so narrow and difficult, as, in appearance, to allow them barely room to cling, and that too at an amazing height over a raging sea. Where this cannot be done, the fowler is lowered by a rope from the top; and, to take the young-ones, oftentimes stations himself on the most dangerous ledges. Unterrified, however, he ransacks all the nests within his reach; and then, by means of a pole and his rope, he moves off to other places to do the same.

We are told also, that to take the old birds, the inhabitants tie a Herring to a board, and set it afloat; so that, by falling furiously upon it, the bird may break its neck in the attempt.

THE BOOBY.

This and some other species have been denominated Boobies from their excessive stupidity; their silly aspect; and their habit of continually shaking their head and shivering, when they alight on the yards or rigging of vessels, where they often suffer themselves to be taken with the hand. In their shape and organization they greatly resemble the Corvorants.

THE BOOBY

The Boobies have an enemy of their own tribe, that perpetually harasses them. This is the Frigate Pelican; which rushes upon them, pursues them without intermission, and obliges them by blows with its wing and bill, to surrender the prey that they have taken, which it instantly seizes and swallows.

Dampier gives us a curious account of the hostilities between what he calls Man-of-war Birds, and the Boobies, in the Alcrane Islands, on the coast of Yucatan. "These birds were crowded so thick, that I could not (he says) pass their haunts without being incommoded by their pecking. I observed that they were ranged in pairs; which made me presume that they were male and female. When I struck them some flew away; but the greater number remained, and would not stir, notwithstanding all I could do to rouse them. I remarked also, that the Man-of-war Birds and the Boobies always placed sentinels over their young-ones, especially when they went to sea for provisions. Of the Man-of-war Birds, many were sick or maimed, and seemed unfit to procure their subsistence. They lived not with the rest of their kind; being either expelled from society, or separated by choice, and were dispersed in different places, probably that they might have a better opportunity of pillaging. On one of the islands I once saw more than twenty sally out from time to time into the open country, in order to carry off booty, and return again almost immediately. When one of them surprised a young Booby that had no guard, he gave it a violent peck on the back to make it disgorge; which it did instantly: it cast up one or two fish about the bulk of one's hand, which the old Man-of-war Bird swallowed. The vigorous ones play the same game with the old Boobies which they find at sea. I saw one myself, which flew right against a Booby; and, with one stroke of its bill, made him deliver up a fish that he had just swallowed. The Man-of-war Bird darted so rapidly, as to catch this fish in the air before it could fall into the water."

BOOBY OF THE BASS ROCK.

THE FISHING CORVORANT.

The following account of this Chinese bird, by Sir George Staunton, is the most authentic of any that has yet been given to us:

"The embassy (he says) had not proceeded far on the southern branch of the Imperial Canal, when they arrived in the vicinity of a place where the Leutze, or famed fishing-bird of China, is bred, and instructed in the art and practice of supplying his owner with fish in great abundance.

"On a large lake close to this part of the canal, and to the eastward of it, are thousands of small boats and rafts, built entirely for this species of fishing. On each boat or raft are ten or a dozen birds, which at a signal from the owner, plunge into the water; and it is astonishing to see the enormous size of the fish with which they return, grasped within their bills. They appeared to be so well trained, that it did not require either ring or cord about their throats, to prevent them from swallowing any portion of their prey, except what the master was pleased to return to them for encouragement and food. The boat used by these fishermen is of a remarkably light make; and is often carried to the lake, together with the fishing birds, by the men who are there to be supported by it."

FISHING CORVORANT.

M. de Buffon says, that they are regularly educated to fishing, as men rear Spaniels or Hawks, and one man can easily manage a hundred. The fisherman carries them out into a lake, perched on the gunnel of his boat; where they continue tranquil, and wait for his orders with patience. When arrived at the proper place, on the first signal, each flies a different way, to fulfil the task assigned to it. It is pleasant on this occasion to behold with what sagacity they portion out the lake or canal where they are upon duty. They hunt about, they plunge, they rise a hundred times to the surface, until they have at last found their prey. They then seize it by the middle, and carry it to their master. When the fish is too large, they assist each other; one seizes it by the head, and another by the tail, and in this manner they carry it to the boat together. There the boatman stretches out one of his long oars; on which they perch, and after being delivered of their burden, again fly off to pursue their sport. When they are wearied, he suffers them to rest awhile; but they are never fed until their work is over. In

CORVORANT.

this manner they supply a very plentiful table; but still their natural gluttony cannot be reclaimed even by education. They have always a string fastened round their throats while they fish, for the purpose of preventing them from swallowing their prey; as they would otherwise at once satiate themselves, and discontinue their pursuit.

THE RED-BACKED PELICAN.

Mr. Lewis, a navy surgeon, described to Dr. Latham the mode in which a Red-backed Pelican, that had been brought up tame, stowed its food into its pouch. Like others of its race, it was very voracious. A number of different-sized fishes were laid before it on the ground. The bird first attempted to take up one that weighed ten pounds, but the bill was much too weak for this exertion; it, however, picked up as many as ten others, each of which weighed about a pound, arranged them in rows, with their heads towards the throat; and after this, it walked off in a stately manner, with the bag hanging down to its feet. The pouch held about two gallons of water.

RED-BACKED PELICAN.

OF THE DARTER TRIBE IN GENERAL.

These birds have a small head, and a very long and slender neck. Their bill is long, straight, and sharp-pointed, and, at its base, are the nostrils, situated in a long and conspicuous fissure. The face and chin are bare of feathers. The legs are short, and the four toes are all well webbed together.

There are but three ascertained species of this tribe, and these are confined to the hot latitudes; two to America, and the third principally to Ceylon and Java. They live almost entirely on fish, which they take by darting forward their bill. They generally build their nests and roost in the trees.

THE BLACK-BELLIED DARTER, AND THE WHITE-BELLIED DARTER.

In countries where every one's ideas run on poisonous animals, any person who sees only the head and neck of the Black-bellied Darter, while the rest of the body is concealed among the foliage, would naturally mistake it for one of those serpents accustomed to climb into and reside in trees. And the illusion is increased by its

having all the tortuous motion of those reptiles. In whatever situation it happens to be, whether swimming, flying, or at rest, the most apparent and remarkable part of its body is its long and slender neck, which is constantly in motion, except during flight, when it becomes immovable and extended, and forms, with the tail, a perfectly straight and horizontal line.

BLACK-BELLIED DARTER.

The principal food of the Black-bellied Darter is fish, which, if small enough, it swallows entire; but, if they are too large, it flies off with them to some rock or stump of a tree, where, fixing them under one of its feet, it tears them to pieces with its bill.

Though water is its principal element, yet this bird builds its nest and rears its offspring on rocks and trees; but always on those that are so near to the rivers, that it can, either in case of danger, or when the young-ones are old enough to swim, precipitate them into it.

There are few birds that exceed these in sagacity and cunning, particularly when surprised on the water. In this situation it is almost impossible to kill them. Their head, which is the only part exposed, disappears the instant the flint touches the hammer of the gun; and, if once missed, it is in vain to think of approaching them a second time, as they never show themselves more than once, unless at very great distances, and then only for the moment necessary for breathing. In short, so cunning are they, that they will often baffle the sportsman, by plunging at the distance of a hundred paces above, and rising again to breathe at the distance of more than a thousand below him; and if they have the good fortune to find any reeds, they conceal themselves there, and entirely disappear.

These birds are found in several parts of the south of Africa, and in the islands of Ceylon and Java.

The *White-bellied Darters*, according to the account of Mr. Bartram, are natives of America. He states, that they have a peculiar manner of spreading out their tail, like an unfurled fan. They delight to sit in little peaceable communities, on the dry limbs of trees, hanging over the still waters, with their wings and tail expanded; and, when

approached, they drop from the limb into the water, as if dead, and for a minute or two are not seen, when, on a sudden, at a vast distance, their long slender heads and necks are raised, and have much the appearance of snakes, as no other parts of the body are to be seen when swimming, except sometimes the tip of the tail. In the heat of the day they are often seen in great numbers sailing high in the air over the rivers and lakes.

WHITE-BELLIED DARTER.

OF THE DIVER TRIBE IN GENERAL.

In the Divers the bill is slender, pointed, and nearly straight; the nostrils are linear, and situated at the base. The tongue is long and slender; and the legs are placed backwards near the tail.

These birds walk awkwardly, and with great difficulty; but they fly very swiftly along the surface of the water, and swim and dive with remarkable dexterity. One division of them, the Guillemots, chiefly inhabit the sea; but the rest seldom frequent any but rivers and fresh-water lakes. They all live on fish.

THE NORTHERN DIVER, OR LOON.

Every part and proportion of this bird is so incomparably adapted to its mode of life, that in no instance do we see the wisdom of God in the creation to more advantage. The head is sharp; and smaller than the part of the neck adjoining, in order that it may pierce the water: the wings are placed forward, and out of the centre of gravity; for a purpose which will be noticed hereafter: the thighs are quite backward, in order to facilitate diving; and the legs are flat, and almost as sharp backwards as the edge of a knife, that, in striking they may easily cut the water: while the feet are broad for swimming; yet so folded up, when

NORTHERN DIVER.

advanced forward to take a fresh stroke, as to be full as narrow as the shank. The two exterior toes of the feet are longest; and the nails are flat and broad, resembling those of the human body; which give strength to the bird, and increase its power of swimming. The foot, when expanded, is not at right angles to the leg; but the exterior part, inclining towards the head, forms an acute angle with the body: the intention being, not to give motion in the line of the legs themselves, but by the combined impulse of both in an intermediate line, the line of the body.

Most people who have exercised any degree of observation, know that the swimming of birds is nothing more than walking in the water, where one foot succeeds the other as on the land; but no one, as far as I am aware, says the Rev. Mr. White, has remarked that diving-fowls, while under water, impel and row themselves forward by a motion of their wings, as well as by the impulse of their feet: yet such is really the case, as any one may easily be convinced, who will observe ducks when hunted by dogs in a clear pond. Nor do I know that any one has given a reason why the wings of diving-fowls are placed so forward: doubtless, not for the purpose of promoting their speed in flying, since that position certainly impedes it: but probably for the increase of their motion under water, by the use of four oars instead of two; and were the wings and feet nearer together, as in land-birds, they would, when in action, rather hinder than assist one another.

NORTHERN DIVER.

OF THE GULLS IN GENERAL.

Their bill is strong, straight, and slightly hooked at the point. On the under part of the lower mandible there is an angular prominence. The nostrils are oblong and narrow, placed in the middle of the bill; and the tongue is somewhat cloven. The legs are short, and naked above the knees; and the back toe is small.

The Gulls frequent chiefly the northern countries, and their habits differ from those of most other water-fowl. They do not dive so much as others; but they usually feed on the gregarious species of fish and their fry, which they catch near the surface of the water. When the sea is rough they come into the harbors, where they feed on worms. They are exceedingly voracious; and, when terrified, throw up their undigested food. By the lightness of their body, and the length of their wings, they are enabled to fly with considerable rapidity. The young-ones do not become of the same color with the old birds, until their third year. The eggs are eatable, but their flesh is generally tough and unpleasant.

THE SKUA GULL.

The Skua Gull inhabits Norway, the Feroe islands, and other parts of the north of Europe. It is the most formidable bird of its tribe; its prey being not only fish, but (what is wonderful in a web-footed bird) all the lesser sorts of water-fowl, and (according to the account of Mr. Schroter, a surgeon of the Feroe Isles) Ducks, Poultry, and even young Lambs.

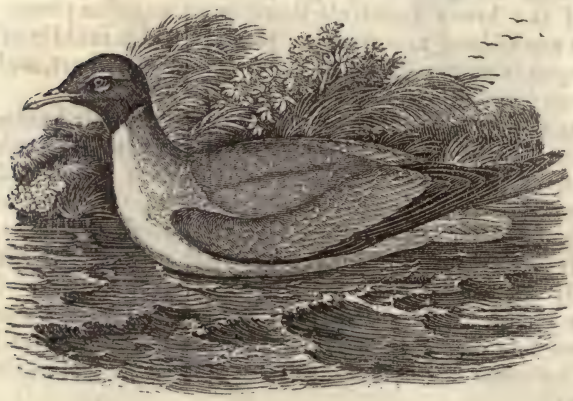
SKUA GULL.

In defending its offspring it has the fierceness of the Eagle. When the inhabitants of the Feroe islands visit the nest of the Skua Gull, the parent birds attack them with such force, that, if they hold a knife perpendicularly over their heads, the Gulls will sometimes transfix themselves in their fall on the plunderers.

In Foula, the Skua Gulls are privileged; being said to defend the flocks from the attacks of the Eagle, which they beat off and pursue with great fury; so that even that rapacious bird seldom ventures to approach the places which they inhabit. The natives of Foula on this account impose a fine upon any person who destroys one of these useful defenders: and deny that they ever injure their flocks or poultry; but imagine them to live only on the dung of the Arctic Gull and other larger birds.

BLACK-HEADED GULL.

This species very common in most parts of America, is also frequent in Europe, particularly in the warmer parts, as the coasts of Sicily, Spain, and the islands of the Mediterranean; elsewhere, in that continent it is rare and accidental. In America it is found as far south as Cayenne and Mexico but does not appear to inhabit far north of the limits of the Union. On the



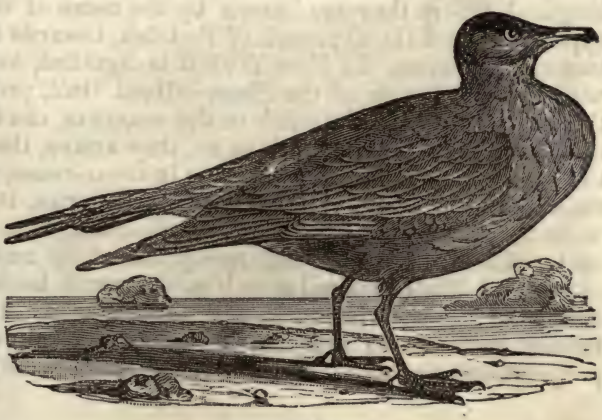
BLACK-HEADED GULL.

coast of New Jersey they make their appearance in the latter part of April, and are soon discovered by their familiarity and noise; companies are even seen at times around the farm house, or coursing along the river shores, attending upon the track of the fishermen for garbage, gleaning among the refuse of the tide; or scattering over the marshes and plowing fields, they collect, at this season, an abundant repast of worms, insects and their larvæ. Great numbers are also seen collected together to feed upon the prolific spawn of the King-Crab. While thus engaged, if approached, they rise as it were in clouds, at the same time squalling so loudly that the din may be heard for two or three miles.

The Black-Headed Gulls breed in the marshes of New Jersey, but are not seen at this period in New England, and are indeed at all times rare in that quarter. The eggs, three in number, are of a drab or olive grey, thinly marked with small irregular touches of pale purple, and dilute brown. They measure two and a quarter inches by one and a half. Being apparently a somewhat tender species, they retire to the south early in autumn, and on commencing their migrations, if the weather be calm, they are seen to rise up in the air spirally, all loudly chattering as it were in concert, like a flock of cackling hens, the note changing at short intervals into a *'haw, 'ha, 'ha, 'ha, 'haw*, the final syllable lengthened out into an excessive and broad laugh. After ascending to a considerable height, they all move off, by common consent, in the line of their intended destination.

RICHARDSON'S JAGER.

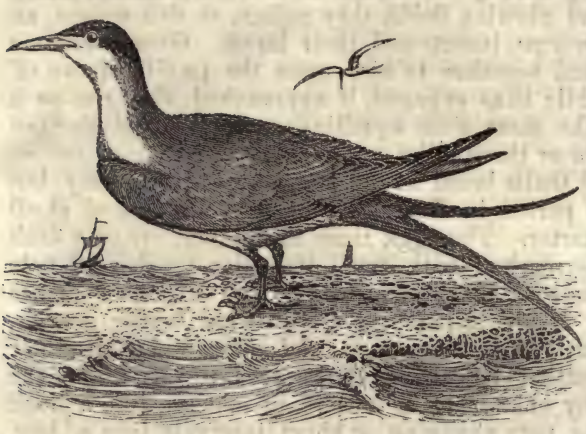
This species, according to Dr. Richardson, breeds in considerable numbers in the Barren Grounds, at a distance from the coast, in the latitude of about 65°. It feeds on shelly molusca, which abound in the small lakes of the fur countries: and it harasses the Gulls in the same way with others of the genus. This species is occasionally seen in winter, in the inland bays in the vicinity of Boston, flying about in pairs, or sitting on the water.



RICHARDSON'S JAGER.

THE GREAT, OR COMMON TERN.

The Common Tern is an inhabitant of both continents, being met with on the coasts of most parts of Europe as far north as the ever inclement shores of Greenland and Spitzbergen; it is also found on the Arctic coasts of Siberia and Kamtschatka. In the winter it migrates to the Mediterranean, Madeira, and the Canary Islands. In America, it breeds along all the coasts of the Northern and Middle States, and penetrates north into the fur countries, up to the 57th parallel of latitude. They also breed on the sand-bars of the great western lakes, being frequent in those of Erie, Huron and Superior. In short, no bird is more common along the sea coasts, and lakes, of the whole northern hemisphere, within the limits of cool or moderate temperature.

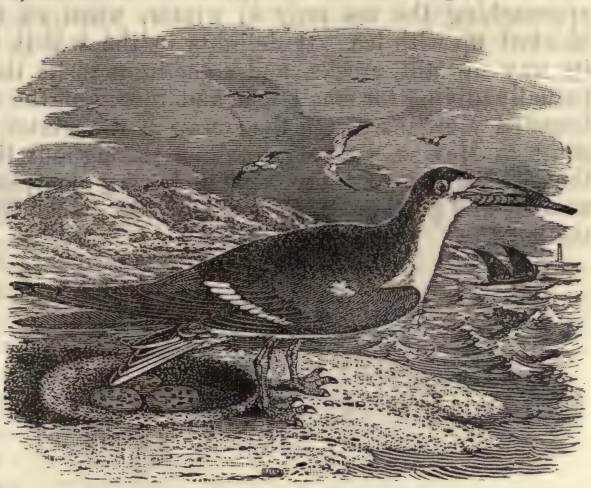


GREAT TERN.

The Great Tern arrives on the coast of New Jersey about the middle of April, and soon after they are seen on the shores of New England, where they are known by the name of the Mackerel Gull, appearing, with the approach of that fish, towards the places of their summer residence. In New York it is dignified, for the same reason, with the appellation of the Sheep's-Head Gull, prognosticating also, the arrival of that dainty fish in the waters of the State. About the middle of May, still gregarious as they arrive, they commence with the cares of reproduction. Artless in contrivance, the Terns remedy the defect of a nest, by selecting for their eyries, insulated sand-bars, wide beaches, but most commonly desolate, bare, and small rocky islets, difficult of access, and rarely visited by any thing but themselves and birds of similar habits. A small hollow scratch on the surface of the shelving rock, with the aid of a little sand or gravel, merely sufficient to prevent the eggs from rolling off, are all the preparations employed by these social and slovenly birds.

THE BLACK SKIMMER.

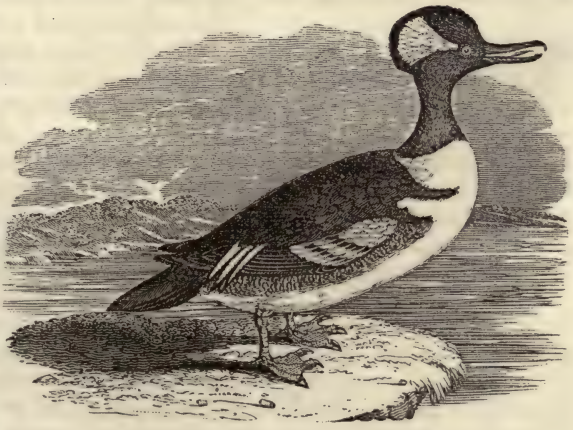
This singular bird, inhabits the warmer and milder parts of the United States from the coasts of New Jersey to Florida, it is also found in Guiana, Cayenne, and Surinam. The East India species is probably distinct. The *R. fulva* of Guiana, described by Linnæus, differs from the present in having those parts fulvous which in this are black; their general appearance and habits are however the same.



BLACK-SKIMMER.

THE HOODED MERGANSER.

This elegant species is peculiar to North America, and inhabits the interior and northern parts of the fur countries to their utmost limits. It is also among the latest of the Anatidæ to quit those cold and desolate regions. It makes a nest of withered grass and feathers in retired and unfrequented places, by the grassy borders of rivers and lakes. According to Audubon, it also breeds around the lagoons of the Ohio, and on the great North-Western Lakes of the interior. On the river St. Peters, in the 45th parallel, Mr. Say observed them on the 18th of July, no doubt in the same place where



HOODED MERGANSER.

they had passed the rest of the summer. At Hudson's Bay, where they arrive about the end of May, they are said to nest close to the borders of lakes and lay six white eggs. The young are at first yellowish and begin to fly in July. The Hairy Head, as this species is sometimes called, is rarely seen but in fresh waters and lakes, approaching the sea only in winter, when its favorite haunts are blocked up with ice. It delights in the woody interior, and traces its way up still creeks, and sometimes visits the mill ponds, perpetually diving for small fish and insects in the manner of the Red-breasted Merganser. In the course of the winter they migrate as far south as Mexico, are very common throughout the whole winter in the Mississippi, and are rendered very conspicuous by the high circular and parti-colored crest which so gracefully crowns the top of the head.

AMPHIBIOUS ANIMALS.

REPTILES

OF THE TORTOISE TRIBE.

THE animals of this tribe have an advantage over most others, even from their first seeing the light, in a solid and durable house; an asylum which is at the same time capable of resisting very powerful enemies, and yet is not fixed to one spot. They carry every where along with them the dwelling which their Creator has furnished, and under which they generally dwell in perfect security.

THE TORTOISE.

This consists of two plates; the one above, and the other below, joined together at the sides. The upper one is convex, and into it the ribs and back-bone are ossified: the other contains the breast bones, or sternum.

At each end of the two united shells, there is a hole; one for the head, neck, and fore-feet to pass through, and the other, at the opposite end, for the hinder feet, and the tail.

When these animals are inclined to walk or swim, they extend their head and feet from under their armor. These parts, with the tail, are covered by a strong, flexible skin, which is fixed within, to the edges of the shell.

The head is small, and in the place of teeth it is furnished with hard and bony ridges. The upper jaw closes over the lower one like the lid of a box; and the strength of the jaws is said to be so great, that it is impossible for any person to open them when they have once fastened. Even after the head has been cut off, the muscles retain a surprising degree of rigidity.

The legs are short, but inconceivably strong. One of the larger species has been known to carry five men, all at the same time, on its back, with the greatest apparent ease and unconcern.

No animals are more tenacious of life than these: even if their head be cut off, and their chest be opened, they will continue to live for several days. The species that inhabit land or the fresh-waters, subsist principally on worms, snails, and fish; and the others, which reside in the ocean, feed, for the most part, on sea-weeds.

The Marine Tortoises, or *Turtles*, are distinguished from the others

by their large and long fin-shaped feet, in which are enclosed the bones of the toes; the first and second only of each foot having visible or projecting claws.

Of these animals, there are, in the whole, about *thirty-six* species: four marine, eighteen inhabiting the fresh waters, and the rest residing on land.

THE COMMON, OR GREEK TORTOISE.

The upper shell of this Tortoise is so protuberant, that the animal is able, without much difficulty, to recover its procumbent posture, if, by accident, it has been turned upon its back; and it does not, in this case, like some of the Turtles, remain a prey to its enemies.

THE COMMON TORTOISE.

The jaws of the Greek Tortoise are moved by means of muscles, which have such extraordinary force and activity, that sometimes for more than half an hour after the head of the animal is cut off, they will gnash together with considerable force.

For extreme slowness in all its movements, the Tortoise has been notorious, even from the most remote periods of antiquity. This is principally occasioned by the position of the legs, which are situated very much towards the sides of the body, and are consequently spread far out from each other. It may likewise be in some degree caused by the great weight of the shell pressing on this unfavorable position of the legs. In walking, the claws of the fore-feet are rubbed separately, and one after another, against the ground; when one of the feet comes in contact with the ground, the inner claw first bears the weight of the body, and so on along the claws in succession to the outermost. The foot in this manner acts somewhat like a wheel.

This species resides principally in burrows that it forms in the ground. In these it sleeps away the greatest part of its time, appearing abroad only for a few hours in the middle of each day. It feeds on various kinds of herbs, fruit, worms, snails, and insects; but never attacks warm-blooded animals nor fish. Its manners are exceedingly gentle and peaceable; hence it is easily domesticated, and is an agreeable object in gardens, where it destroys noxious slugs and insects. In defect of its usual food, it may be supplied with, and will live sufficiently well on bran or meal.

In the autumn it retires to some hiding-place under the surface of the earth, where it remains in a state of torpor for four or five months not again making its appearance abroad until re-called into life by the warmth of the vernal sun. About the beginning of June, the female when in her native wilds, scratches a hole in some warm situation, where she deposits her four or five eggs. These are hatched in September; and the young-ones when they first come into the world are not bigger than a walnut.

The Rev. Mr. White of Selbourne, attended accurately to the manners of one that, for upwards of thirty years, was in the possession of a lady of his acquaintance who resided in Sussex. It regularly retired under ground about the middle of November, whence it did not emerge until about the middle of April. Its appetite was always most voracious in the height of summer, eating very little either in the spring or autumn. Milky plants, such as lettuces, dandelions, and sowthistles, were its principal food. In scraping the ground to form its winter retreat, it used its fore feet, and threw up the earth with its hinder ones over its back; but the motion of its legs was so slow, as scarcely to exceed the hour-hand of a clock. It worked with the utmost assiduity, both night and day, in scooping out the earth, and forcing its great body into the cavity; notwithstanding which, the operation occupied more than a fortnight before it was completed.

LAND TORTOISE.

It was always extremely alarmed when surprised by a sudden shower of rain during its peregrinations for food. Though its shell would have secured it from injury, even if run over by the wheel of a loaded cart, yet it discovered as much solicitude about rain, as a lady dressed in her most elegant attire; shuffling away on the first sprinklings, and always, if possible, running its head up into a corner. When the Tortoise is attended to, it becomes an excellent barometer, if it walk elate, and, as it were, on tiptoe, feeding with great earnestness, in a morning, there will almost invariably be rain before night.

Mr. White was much pleased with the sagacity of the above-mentioned animal, in distinguishing those persons from whom it was accustomed to receive attention. Whenever the good old lady came in sight, who had waited on it for more than thirty years, it always hobbled, with awkward alacrity, towards its benefactress, whilst to strangers it was altogether inattentive. Thus did the most abject of torpid creatures distinguish the hand that fed it, and exhibit marks of gratitude not always to be found in superior orders of animal being It was a diurnal animal, never stirring out after dark, and very frequently appearing abroad even a few hours only in the middle of the day. It retired to rest during every shower, and in wet days never came at all from its retreat. Although this Tortoise loved warm weather, yet he carefully avoided the hot sun, since his thick shell, when once heated, must have become extremely painful, and probably dangerous to him. He therefore spent the more sultry hours

under the umbrella of a large cabbage-leaf, or amidst the waving forests of an asparagus bed. But, as he endeavored to avoid the heat in the summer, he improved the faint autumnal beams by getting within the reflection of a fruit-tree wall; and though he had certainly never read that planes inclining to the horizon receive a greater share of warmth, he frequently inclined his shell, by tilting it against the wall, to collect and admit every feeble ray.

Very satisfactory evidence has been produced of this species of Tortoise living to a most extraordinary age. One that was introduced into the garden at Lambeth, in the time of Archbishop Laud, was living in the year 1753, a hundred and twenty years after its introduction; and at last it perished from a neglect of the gardener.

LAND TORTOISE.

Like other oviparous quadrupeds the Tortoise can subsist for an amazing length of time without food. Gerard Blasius kept one by him ten months, during which time it neither ate nor drank. It died at the end of that period, as it was believed, not from hunger, but on account of being kept unsheltered in an unusually cold season.

The horrid experiments of Redi, to prove the extreme vital tenacity of the Tortoise, are disgraceful to human nature. In one instance he made a large opening in the skull, and drew out all the brain, washing the cavity, so as not to leave the smallest part remaining, and then, with the hole open, set the animal at liberty. It marched off, as he says, without seeming to have received the slightest injury, save from the closing of its eyes, which it never afterwards opened. In a short time the hole was observed to close, and in about three days a complete skin covered the wound: in this manner the animal lived without any brain, for six months, walking about, and still moving its limbs in the same manner as it had done previously to the operation.

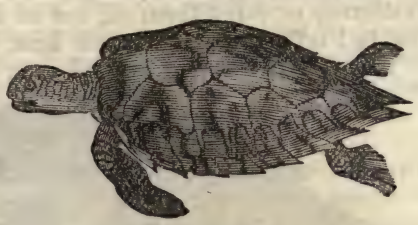
The males of this species are said to fight very often. This is done by butting at each other, and with such force, that the blows may be heard at a considerable distance.

In Greece these Tortoises form an article of food. The inhabitants also swallow the blood without any culinary preparation, and are very partial to the eggs, when made palatable by boiling. In the gardens of some parts of Italy, there are formed for the purpose, wells, in which the inhabitants bury the eggs of the Tortoise. These remain until the ensuing spring, when, by the natural warmth of the climate, they are hatched, and the young-ones come forth. The Tortoises are kept in banks of earth.

The two following Species are Marine Tortoises, or Turtles, as they are usually denominated.

THE GREEN TURTLE.

This species is found in great numbers on the coasts of all the islands and continents of the torrid zone, both in the old and new worlds. The shoals that surround these islands, and border the whole coasts of these continents, produce vast quantities of *algae*, and other marine plants, which, though covered by the water, are near enough to the surface to be readily seen by the naked eye, during calm weather. Amid these submarine pastures, numerous marine animals are found, and amongst them the Green Turtles are often seen, in vast numbers feeding quietly on the plants which are there produced.



GREEN TURTLE.

As the Turtles find a constant abundance of food, on the coasts which they frequent, they have no occasion to quarrel with animals of their own kind, for that which is afforded in such plenty to them all. They flock peaceably together; but they do not appear, like many other herding animals, to have any kind of associations. They merely collect, as if by accident, and they remain without disturbance.

These animals, by means of their powerful jaws, browse on the grass, sea-weed, and other plants which grow on the shoals and sand-banks; and with them they are likewise able to crush the shell-fish on which they sometimes feed.

After having satisfied their appetites, they often retire to the fresh water, at the mouth of the great rivers, where they float on the surface, holding their heads above the water, apparently for the purpose of breathing the fresh air. But as they are surrounded with many dangers, both from their natural enemies, and from mankind, they are necessitated to use great precaution, in thus indulging themselves with cool air, and with the refreshing streams of river water. The instant they perceive even the shadow of any object, from which they suspect danger, they dive to the bottom for security.

The legs of the Green Turtles bear so great a resemblance to fins, as to afford them little service except in swimming. These animals are indeed seldom found on shore at any other than their breeding time, about the month of April; when the females leave the water, from time to time, in order to deposit their eggs in the sand. By means of their fore paws they each dig a hole in the sand, above high-water mark, about one foot wide, and two feet deep, into which they sometimes drop upwards of a hundred eggs. When engaged in this operation, they are so intent on the business, that they do not notice

any person who approaches the place, and they will even drop their eggs into a hat if it be held under them. If, however, they be disturbed before the commencement of the operation, they always forsake the place. They lay their eggs at three, and sometimes four different times, about fourteen days asunder; so that the young-ones are hatched and come forth also at different periods. After the eggs are deposited, the parent scratches over them a layer of sand, sufficient to prevent them from being seen by any person or animal, that might endeavor to destroy or carry them off, but so thin as to admit of their receiving the full influence of the sun's heat, for warming and hatching them.

The eggs are spherical, and each two or three inches in diameter,

CATCHING GREEN TURTLES.

covered by a strong membrane greatly resembling wet parchment. They are composed of a yolk, which by boiling may be coagulated like that of other eggs, and of a white, which is said not to be coagulable in any other degree of heat.

At the end of twenty or thirty days, (for the time differs according to the heat of the climate,) the young Turtles may be seen creeping out from under the sand, being then two or three inches long, and not quite so much in breadth. Their natural instinct leads them, about eight days afterwards, (when they have attained sufficient strength,) to seek the neighboring water, as a place of security, and where they may find their proper food. To this they crawl very

slowly, and, being still too light, and too weak to bear the force of the surf, they are often driven back on the beach, where great numbers of sea-fowl are generally in waiting to devour them. Hence only a small number, in proportion to the multitudes that are hatched, escape into their proper element. Mankind likewise search, with great eagerness, for the eggs, on account of their furnishing an agreeable and wholesome food.

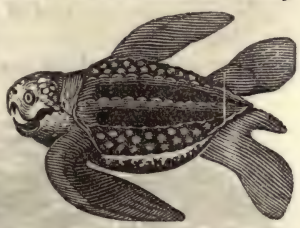
On the coast of Isini, in Africa, the inhabitants catch great numbers of the young-ones immediately after they are hatched. These they secure in a kind of enclosures, surrounded by stakes, and so situated as to admit the influx of the sea. Here they are allowed to feed and grow, in order to be taken out when wanted; this being a more ready and less dangerous mode of supply, than by the common manner of catching the grown animals.

The old females of this species, notwithstanding they only come on shore in the night, in order to deposit their eggs, are often caught by the fishermen, who are in waiting about their haunts; and who either dispatch them by blows with a club, or turn them over on their backs. When they happen to be large, it sometimes requires the efforts of several men to turn one of them over, and these must often employ even handspikes or levers for that purpose. The back shell in this species is so flat, as to render it impossible for the animal to recover its proper position, when once it is thrown upon its back.

These animals have their name from the green color of the flesh. Besides affording to mankind their flesh and eggs for food, some of them yield between twenty and thirty pints of a yellow or greenish oil, which is used in lamps for burning, or, when fresh, with different kinds of provisions.

THE LOGGERHEAD TURTLE, AND IMBRICATED TURTLE.

These Turtles inhabit the seas about the West India islands; they are also found in the Mediterranean, but particularly about the coasts of Italy and Sicily. In some seas they are more numerous than the Green Turtles; and being stronger, they occasionally make much longer voyages. They are often found in the ocean, at a distance of more than eight hundred leagues from land. One of them was seen by Catesby, sleeping on the surface of the water, in latitude thirty degrees north, apparently about midway between the Azores and the Bahama islands.



LOGGERHEAD TURTLE.

They are excessively bold and fierce. When attacked they vigorously defend themselves, both with their mouth and paws, against the assailants; and it is extremely difficult to make them quit any hold which they happen to take with their jaws: so powerful are these, that the animals are able to divide even very strong substances by

means of them. Aldrovandus assures us, that on offering a thick walking-stick to the gripe of a Loggerhead Turtle, which he saw publicly exhibited at Bologna, the animal bit it in two in an instant.

The Loggerheads are not, like the Green Turtles, contented with marine-plants: their principal food is shell-fish, which their strong beak enables them, without difficulty, to tear from the rocks and break to pieces; and their voracity is said to be such, that, in some countries, it leads them to attack even young Crocodiles, which they even mutilate of their limbs or tail.

As the food of this species is, in its nature, more subject to putrefaction than that of the Green Turtle, its flesh participates of the bad flavor of these substances, and is oily, rancid, fibrous, tough, and fishy. The musky smell which proceeds from most of the Tortoises, is peculiarly strong and disagreeable in this species.

The body of the Loggerhead Turtle yields a great quantity of oil, which is too offensive to be used in any manner of food; but it serves for lamps, for the dressing of leather, and for the bottoms of ships, which last it is said to preserve from the attacks of worms. The plates of the shell are not of sufficient thickness to be of great use in the manufacture of ornamental articles.

The substance that we call *Tortoise-shell* is the production of the *Imbricated Turtle*, a species nearly allied to the present, which is found in the Asiatic and American seas, and sometimes in the Mediterranean. The plates of this species are far more strong, thick, and clear than those of any other; and these constitute the sole value of the animal. They are semi-transparent, beautifully variegated with different colors, and, when properly prepared and polished, are used for a variety of ornamental purposes. They are first softened by being steeped in boiling water, after which they may be moulded into almost any form.

OF THE FROG TRIBE.

THE animals which compose this tribe are very generally dispersed over the globe. They feed on insects and worms, and reside principally in dark and unfrequented places, from which they crawl forth only in the night. Many of them have an aspect very disgusting and unpleasant. Some, however, less unpleasant to the sight, are furnished with slender limbs, and have their toes terminated by flat, circularly-expanded tips, which enable them to adhere at pleasure to the surface of even the smoothest bodies: these reside generally in

GROUP OF FROGS.

the trees, where they adhere to the lower sides of the leaves or branches.

All the species are oviparous, and the eggs are perfectly gelatinous. From the egg proceeds a Tadpole without feet, but furnished with a tail to aid its motion in the water: this drops off as the legs become protruded. In this imperfect state the animals have also a sort of gills or subsidiary lungs: and several of them have a small tube on the lower lip, by means of which they can fix themselves to solid bodies, for the purpose of eating, or of performing other functions. They all arrive at maturity about their fourth year, and very few outlive the age of ten or twelve.

The whole of this tribe catch their food by means of their tongue, which is inserted into the front of the mouth, and, when the animal is at rest, lies with its point towards the throat. The moment the animal observes an insect within its reach, this is suddenly thrown out, and the little victim is secured on its glutinous extremity.

In several of the species, the toes both of the fore and hind feet are separate: but in others, these are connected together by webs or membranes, for the purpose of aiding them in swimming.

The number of species hitherto described is about *fifty*. They are divided into three sections; namely,

1. *Frogs*, which have smooth bodies, longish legs, and discharge their eggs in a mass. These leap with great agility; and their hind legs are, in general, equal in length to the head and body.

2. *Hylæ*, or *Tree-Frogs*, which have their hinder legs very long, and the toes unconnected. These are generally smaller than Frogs, and more elegant in all their proportions. Their toes are furnished with little viscid pellets, by means of which they are enabled to attach themselves even to the under surfaces of polished bodies. They are extremely nimble, leap with great force, and are able to pursue insects, on which they feed, with great agility, even on the branches and leaves of trees.

3. *Toads*, which have their bodies puffed up and covered with warts. These have short legs, and can scarcely be said to leap. They avoid the light, and seldom leave their retreats in search of prey except during the night. These animals discharge their eggs in a long necklace-like string.

THE COMMON FROG.

The appearance of the common Frog is lively. The limbs are well calculated for aiding the peculiar motions of the animal, and its webbed hind feet for assisting its progress in the water, to which it occasionally retires during the heats of summer, and again in the frosts of winter. During the latter period, and till the return of warm weather, it lies in a state of torpor, either deeply plunged in the soft mud at the bottom of stagnant waters, or in the hollows beneath their banks. Immediately on coming forth in the spring, these animals change their skin, and this operation they repeat, generally about

every eight or ten days, through the whole summer. The old skin, after it is separated from the body, resembles rather a kind of thin mucus than a membrane.

COMMON FROG.

The spawn of this Frog, which is generally cast in the month of March, consists of a clustered mass of gelatinous, transparent and spherical eggs, from six hundred to a thousand in number, in the middle of each of which is contained the embryo or Tadpole, in the form of a black globule. This sinks to the bottom of the water. During some hours it suffers no perceptible change; but when the eggs begin to enlarge in consequence of becoming proportionally lighter, it rises to the surface. Roesel, the German naturalist, who paid great attention to this tribe, informs us, that at the end of eight hours the gelatinous part of the eggs grow thicker; and that the eggs themselves, as they increase in size, take somewhat of a spherical form. On the twenty-first day, the egg, if carefully examined, will be found to have opened a little on one side, where the tail of the Tadpole makes its appearance; and this afterwards becomes more and more distinct every day. About the thirty-ninth day the little animals begin to have motion. Shortly after this, they tear asunder the membrane that immediately surrounds them, and float in the glary fluid which connects the eggs together. The Tadpole at first quits this glary matter only occasionally, as if to try its strength, and it soon afterwards returns, apparently for the double purpose of retreat and nourishment.

TADPOLES.

The Tadpoles are furnished with a small tubular kind of sucker beneath the lower jaw, by means of which they are enabled to hang at pleasure to the under surface of aquatic plants. From the situation of this sucker, the little animal is obliged always to turn on its back, when inclined either to respire or to lay hold of any substance on the surface of the water. The interior organs of the Tadpole, when closely examined, are found to differ in many respects from those of the future Frog. The intestines, in particular, are coiled into a flat spiral form, somewhat resembling a cable in miniature. When the animal is about six weeks old, the hind legs appear, and in about a fortnight these are succeeded by the fore legs. Not long afterwards the form is completed, and the animal, for the first time, ventures upon land.

With this wonderful change of body, the animals also change their

food; they now surrender their former vegetable diet, for the smaller species of snails, worms, and insects; and the structure of their tongue is admirably adapted for seizing and securing this prey. The root is attached to the fore part of the mouth, so that when unemployed, the tongue lies with the tip towards the throat. The animal, by this singular contrivance, is enabled to bend it to a considerable distance out of its mouth. When it is about to seize on any object, it darts out the tongue with great agility, and the prey is secured on its broad and jagged glutinous extremity. This it swallows with so instantaneous a motion, that the eye can scarcely perceive the act. Nothing, however, can appear much more awkward and ludicrous, than a Frog engaged with a large worm or a small Snake; for nature seems to have put a restraint upon the voracity of these animals, by forming them very inaptly for seizing and holding their larger prey.

COMMON FROGS.

About the end of July, when the young Frogs have entirely laid aside their Tadpole shape, they quit the water, and soon afterwards emigrate into the woods and meadows. The commencement of their journey is always in the evening. They travel all night, and conceal themselves during the day, under stones, or in other recesses; and resume their journey only when the night begins. In the day-time, however, whenever it happens to rain, they come out of their retreats, as if to solace and refresh themselves in the falling moisture. Hence originated a superstition common among the lower classes of people throughout Europe. These immense multitudes of Frogs, thus often suddenly emerging, and afterwards as suddenly disappearing, have greatly puzzled the weak heads of the vulgar, who could not explain so wonderful a phenomenon, but by the strange conjecture, that they descended in showers from the clouds, or that they were suddenly engendered by the mixture of drops of rain with the dust; and that, as soon as the sun regained his influence, they were all immediately annihilated.

Frogs are numerous throughout Europe; and in the parts of America, about Hudson's Bay, as far north as the sixty-first degree of latitude. They frequent there the margins of lakes, ponds, rivers, and swamps; and as the winter approaches, they burrow under the moss, at a considerable distance from the water, where they remain in a frozen state till spring. Mr. Hearne says, he has frequently seen

them dug up with the moss, frozen as hard as ice. In this state their legs may be as easily broken off as the stem of a tobacco-pipe, and without communicating to them the least sensation; but by wrapping them up in warm skins, and exposing them to a slow fire, they soon come to life, and the mutilated animals gain their usual activity. If, however, they be permitted to freeze again, they are past all recovery.

The mode of respiration of these animals, in common with many of the other reptiles, is exceedingly curious. The organs adapted to this use are not placed in the belly, nor in the lungs themselves, but in the mouth. Behind the root of the tongue is the slit-like opening of the trachea; and, at the front of the upper part of the head are two nostrils, through which only the animal draws the air, never opening its mouth for this purpose. Indeed, the jaws during this action, are kept closely locked into each other by grooves; for if the mouth be open, the animal cannot respire at all, and it will presently be seen struggling for breath. When we carefully observe this Frog, we perceive a frequent dilatation and contraction in the skinny bag-like part of the mouth which covers the under jaw. From this it would appear, at first sight, as if the creature lived all the while on one mouthful of air, which it seems to be playing backward and forward, between its mouth and lungs. But, for each movement in the jaw, a corresponding twirling movement may be observed in the nostrils. The mouth seems therefore to form a sort of bellows, of which the nostrils are the air-holes, and the muscles of the jaws, by their contraction and dilatation, make the draught. The nostrils are so situated, that the least motion on them enables them to perform the office of a valve. By the twirl of the nostril the air is let into the mouth, when a dilatation of the bag takes place: it is then emptied from the mouth, through the slit behind the tongue, into the lungs, when there is a slight motion in the sides of the animal, and the muscles of the abdomen again expel it; and soon afterwards a second twirl in the nostrils takes place and the like motions follow. Thus it appears that the lungs are filled by the working of the jaws, or, in other words, that Frogs swallow air much in the same manner that we swallow food.

Frogs, during the greatest part of the year, remain on land; and do not altogether retire to the water until the cold nights of autumn begin to set in. They then retreat, for the winter, to the bottom of stagnant waters.

They arrive at full age in about five years, and are supposed to live twelve or fifteen; and these animals are so tenacious of life, that they will continue to live, and will even jump about for several hours after their heads have been cut off.

THE EDIBLE FROG.

The Edible Frog is considerably larger than the common species: and, though somewhat rare in England, is found in plenty in Italy France, and Germany.

Its color is olive green, marked with black patches on the back, and on its limbs with transverse bars of the same. From the tip of the nose, three distinct stripes of pale yellow extend to the extremity of the body; the middle one slightly depressed, and the lateral ones considerably elevated. The under parts are of a pale whitish color, tinged with green, and marked with irregular brown spots.

The ova or spawn of this species, is not often deposited before the month of June. The globules are much smaller than those of the common frogs; and the young animals (which undergo precisely the same changes as the young of that species) are considerably longer in attaining their complete state: this indeed seldom takes place till towards the beginning of November. They arrive at their full growth in about four years, and live to the age of sixteen or seventeen.

These Frogs, during their breeding season, make a noise so loud, that in the night, it may be heard to a very considerable distance. This cry begins in the early part of the spring, as soon as the fine weather sets in. Like the rest of their tribe, they are said always to be most vociferous before rain, and thereby to foretell the approach of damp or rainy weather. In some particular places where the animals are numerous, their croaking is very oppressive to persons who are unaccustomed to it. The males are always much louder than the females.

Like the common species, these Frogs feed on various kinds of insects, worms, and snails; but they are somewhat nice in the choice of their food. They never seize anything till they first perceive it to move. They remain motionless, waiting till the worm or insect comes within their reach; they then spring towards it with great agility, and dart out their tongue, which is smeared over with so tenacious a glue, that, when once it touches an insect, the latter can never escape. They are exceedingly voracious, sometimes venturing to attack and swallow young mice, small birds, and even newly-hatched ducks, when they can surprise these at the surface of the water.

This species lives a good deal in the water, from which, however, they often come out, both in search of food, and to bask in the sun. They become torpid at the commencement of winter; and this torpor generally takes place in some concealed retreat beneath the water, either in marshes, ponds, or lakes. Some few are found in subterraneous holes.

These creatures are brought from the country, thirty or forty thousand at a time, to Vienna, and sold to the great dealers, who have conservatories for them, which are large holes, four or five feet deep, dug in the ground, the mouth covered with a board, and in severe weather with straw. In these conservatories, even during a hard frost, the Frogs never become quite torpid. When taken out and placed on their backs, they are always sensible of the change, and have strength enough to turn themselves. They instinctively get together in heaps, one upon another, and thereby prevent the evaporation of their humidity: for no water is ever put to them. In Vienna, in the year 1793, there were only three great dealers, by whom most of those

persons were supplied who brought them to the market ready for the cook.

The Edible Frogs are caught in various ways: sometimes in the night, by means of nets, collecting together round the light of torches that are carried out for the purpose; and sometimes by hooks, baited with worms, insects, flesh, or even a bit of red cloth. Being exceedingly voracious, they seize, greedily, everything that moves, and, when once they have fixed, they keep their hold with great tenacity. In Switzerland they are caught by means of large rakes, with long, close set teeth, which are thrown into the water, and drawn suddenly out again.

THE BULL-FROG.

The interior parts of America are the principal residence of this species, where, at the springs or small rills, they are said to sit in pairs. In Virginia they are in such abundance, that there is scarcely any where a spring that has not a pair of them. When suddenly surprised, they leap into their hole, at the bottom of which they lie perfectly secure. The inhabitants fancy that these frogs purify the water, and they accordingly respect them as genii of the fountains.

THE BULL-FROG.

Their croaking somewhat resembles the hoarse lowing of a bull; and when, in a calm night, many of these animals are making a noise together, they may be heard to the distance of a mile and a half. The night is the time when they croak, and they are said to do this at intervals. In this act they are either hidden among the grass or rushes, or they are in the water with their heads above the surface.

When alarmed, these animals leap to a most surprising distance at each exertion. A full-grown Bull-Frog will sometimes leap three yards.

They are edible, and have frequently as much meat on them as a young fowl.

THE GREEN TREE-FROG.

This Frog is small, and of slender and very elegant shape. All its upper parts are green, and the abdomen is whitish, marked by numerous granules. The under surface of the limbs is reddish; and on each side of the body there is a longitudinal blackish or violet-colored streak. The body is smooth above, and the hind legs are very long and slender. At the end of each toe there is a round, fleshy, concave apparatus, not unlike the mouth of a leech, by means of which the animal is enabled to adhere even to the most polished surfaces.

TREE-FROG

Were it not from the deeply-rooted prejudices which are imbibed, during childhood, against all the animals of the Frog tribe, the beauty of color, and the elegance of motions of the present species are such, that they would afford delight to every beholder. During the summer months it resides principally among the upper branches of trees, where it wanders among the foliage in quest of insects. These it catches with great dexterity, stealing softly towards them as a cat does towards a mouse, till at a proper distance, when it makes a sudden spring upon them, of frequently more than two feet in height. It often suspends itself by its feet or abdomen, to the under parts of leaves; and in this position, remains concealed among the foliage.

The skin of the abdomen is covered with small glandular granules, of such a nature as to allow the animal to adhere as well by these as by the toes. It will even stick to a glass, by pressing its body against it.

Although during summer it inhabits woods, yet, about the end of autumn, it retires to the waters, and lies concealed in a torpid state, in the mud, or under banks, till the spring. At the return of warm weather, it emerges, like the rest of its tribe, in order to depost its

spawn in the water. This is done about the end of April, or the beginning of May; and, as soon as the operation is over, the animals return to their accustomed haunts in the trees. The offspring continue until the month of August in their Tadpole state.

During the breeding season the male inflates his throat in a very surprising manner, so much indeed as to form a tolerable large sphere beneath his head. He then also exerts a very rough croak, that may be heard to a vast distance. Whenever one of these Frogs begins, all that are within hearing join in the discordant chorus; and the whole is so loud, as almost to resemble the noise of a pack of hounds: this, in still evenings, especially before rain, when they most exert themselves, has been heard nearly three miles. These Frogs are said to be so excellent as barometers, that, if kept in glasses in a room and supplied with proper food, they will afford a sure presage of changes in the weather.

THE COMMON TOAD.

The Toad is an animal known to every one; and by his livid appearance, and sluggish and disgusting movements, is easily recognized.

THE COMMON TOAD.

In some countries, as at Carthagena, and Porto Bello, in America, Toads are so extremely numerous, that, in rainy weather, not only all the marshy ground, but the gardens, courts, and streets, are almost covered with them; so much so, that many of the inhabitants believe that every drop of rain is converted into a Toad. In these countries the Toad is of great size, the smallest individuals measuring at least six inches in length. If it happen to rain during the *night*, all the Toads quit their hiding places, and then crawl about in such inconceivable numbers, as almost literally to touch each other, and to hide the surface of the earth: on such occasions it is impossible to stir out of doors, without trampling them under foot at every step.

When it is irritated, the Toad emits from various parts of its skin a kind of frothy fluid, which, in our climate, produces no other unpleasant symptoms than slight inflammation, from its weakly acrimonious nature. Dogs, on seizing these animals, appear to be affected with a slight swelling in their mouth, accompanied by an increased evacuation of saliva. The limpid fluid which the Toad suddenly ejects from his body when disturbed, has been ascertained to be perfectly free from any noxious qualities. It is merely a watery liquor, the contents of a peculiar reservoir, which, in case of alarm, appears to be emptied in order to lighten the body, that the animal may the more readily escape. It is its extremely forbidding aspect only that has ob-

tained for the Toad its present unjust character of being a dangerously poisonous animal. It is persecuted wherever it appears, on the supposition merely that because it is ugly it must in consequence be venomous. Its eyes are, however, proverbially beautiful, having a brilliant, reddish, gold-colored iris surrounding the dark purple, and forming a striking contrast with the remainder of its body. Hence Shakspeare, in Romeo and Juliet, remarks:

> Some say the Lark and loathed Toad change eyes.

Its reputation as a poisonous animal obtained for it, among the superstitious, many preternatural powers, and the repeated dealers in magic art are stated to have made much use of it in their compounds. This circumstance caused it to be inserted among the ingredients adopted by the witches in Macbeth, to raise the spirits of the dead:

> Toad that under the cold stone
> Days and nights has thirty-one
> Swelter'd venom, sleeping got,
> Boil thou first i' th' charmed pot.

It is no difficult task, singular as it may appear to those who have never attended to this animal, to render it so tame, that it may be taken up into the hand, and carried about a room to catch flies that alight on the walls. A correspondent of Mr. Pennant supplied him with some curious particulars respecting a domestic Toad, which continued in the same place for upwards of *thirty-six* years. It frequented the steps before the hall-door of a gentleman's house in Devonshire. By being constantly fed, it was rendered so tame as always to come out of its hole in an evening when a candle was brought, and to look up, as if expecting to be carried into the house, where it was frequently fed with insects. An animal of this description being so much noticed and befriended, excited the curiosity of all who came to the house, and even females so far conquered the horrors instilled into them by their nurses, as generally to request to see it fed. It appeared most partial to flesh-maggots, which were kept for it in bran. It would follow them on the table, and, when within a proper distance, would fix his eyes and remain motionless for a little while, apparently to prepare for the stroke which was to follow, and which was instantaneous. It threw out its tongue to a great distance, and the insect, stuck by the glutinous manner to its tip, was swallowed by a motion quicker than the eye could follow. After having been kept more than thirty-six years, it was at length destroyed by a tame Raven, which one day, seeing it at the mouth of its hole, pulled it out, and so wounded it that it died.

The Spider was formerly considered an inveterate enemy to the Toad; and it has been said, that whenever these animals met, a contest always took place, in which, from its superior dexterity and address, the former often proved victorious.

Like the rest of the animals of its tribe, the Toad becomes torpid towards the conclusion of the autumn, and remains so during all the

winter months. The place of its retreat is either in the cleft of some rock, under the hollow root of a tree, or among the mud at the bottom of stagnant pools. It is long-lived; and so extremely difficult to be killed, that though its body be covered with lacerations, it will continue to exhibit signs of life for many hours afterwards.

COMMON TOAD.

Of the Toad we have a property recorded, more astonishing than what is mentioned of most other animals, that of continuing alive for centuries, enclosed in solid substances. Although some allowance should be made for that natural love of the marvellous which pervades the great mass of mankind, yet we have too many respectable authorities for the fact, and too frequent instances of its recurrence, to allow us to doubt its truth. A stone-cutter of the name of Charlton, found in the Isle of Ely a living Toad, enclosed in a block of marble. The cavity in which it was contained, was somewhat larger than, but nearly of the figure of, the animal. The Toad seemed in perfect health, although the marble was, on all sides, several inches thick.

OF THE LIZARD TRIBE.

THE CROCODILE.

THE animals of this tribe, which have each four legs and a tail, are distinguishable at first sight from other oviparous quadrupeds. They have no shields, like the Tortoises, and they are all furnished with tails, which are entirely wanting in Toads and Frogs. Their bodies are either covered with scales, of greater or less rigidity, or with a kind of warts or tubercles. Some of the species are scarcely more than two inches in length, whilst others exceed even the length of five or six and twenty feet.

Their tails, at the base, are nearly as thick as the hinder part of the body from which they rise. In some species these are flat; in others rounded: in some short and thick; and in others more than twice as long as the body, and tapering to a slender point. The tail of the Chameleon is *prehensile*, that is, the animal can coil it fast round any object, in order to prevent itself from falling.

The Lizards are principally inhabitants of the warmer regions of the globe. The larger ones live on animals, which they seize by stratagem, and the smaller ones on insects. Many of them serve mankind for food. The aquatic species undergo a metamorphosis, from a Tadpole to a perfect state. Most of them are produced from eggs externally, but some are brought forth alive. In this tribe are found nearly the largest and the smallest animals in the creation.

Although in many of the species the color and form are exceedingly beautiful, these animals, like the Toad, have obtained the general character of being poisonous. The whole tribe, however, (except one species, the Spitting Lizard, which, when irritated, discharges a black and acrid matter, easily cured by camphorated spirits of wine,) is destitute of poison.

THE CROCODILE.

The Crocodile has no lips; so that even when walking or swimming with the utmost tranquillity, the teeth are bare, and the aspect seems animated by rage.

THE CROCODILE.

Another circumstance that contributes to increase the terrific appearance of its countenance, is the fiery glare of its eyes; and these, being situated near each other, have also a malignant aspect.

The armor with which the Crocodile is clad, may be accounted among the most elaborate pieces of natural mechanism. In the full-grown animal it is so strong, as easily to repel a musket-ball. On the lower parts it is much thinner and more pliable than on the upper. The whole animal appears as if covered with the most regular and curious carved work. The color of the full-grown Crocodile is blackish-brown above, and yellowish-white beneath. The upper parts of the legs and sides are varied with deep yellow, somewhat tinged with green. The mouth is of vast width, and furnished with numerous sharp-pointed teeth, thirty or more on each side of the jaws; and these are so disposed, as, when the mouth is closed, to fit alternately above and below.

The Crocodile and Alligator have the largest mouths of almost any land animals. It has been asserted by various writers, that both their jaws are moveable. A single glance, however, at the skeleton will afford sufficient proof, that the upper jaw is fixed, and that the motion is altogether confined to the under one. These animals are also generally believed to have no tongue. This again is an error, for the tongue in both species is larger than that of the Ox; but it is so connected with the sides of the lower jaw, as to be incapable of being stretched far forward. as in other animals.

In the water the Crocodile seems to enjoy his whole strength with much greater advantage than on land. Notwithstanding his size, and his apparent unwieldiness, he moves about in the water with considerable agility, often emitting a kind of silent, half-suppressed murmuring noise. Although the great length of his body prevents him from turning suddenly round, he swims forward with astonishing velocity when about to seize his prey. On land his motions are much more embarrassed, and he is consequently there a less dangerous enemy than in the water.

Except when pressed by hunger, or urged by the necessity of depositing its eggs, this enormous creature seldom leaves the water. Its usual method is to float along upon the surface, like a large piece of timber, and seize whatever animals come within its reach; but, when this method fails, it then goes closer to the bank. There it waits in patient expectation of some land animal that may come to drink; the Dog, the Bull, the Tiger, or man himself. Nothing is to be seen in approaching the river, nor is its retreat discovered till it is too late for safety. It seizes the victim with a spring, and goes at a bound much further than such an unwieldy animal could be supposed capable of doing. Then, having secured the prey, it drags it into the water, instantly sinks with it to the bottom, and, in this manner, quickly drowns it. Sometimes it happens that the creature wounded by the Crocodile makes its escape; in which case, the latter pursues and often takes it a second time. He seldom moves far from rivers, except in covert and marshy places; so that, in many parts of the East, it is very dangerous to walk carelessly on the banks of unknown rivers, or among sedgy grounds; and still more so to bathe, without the utmost circumspection, in unfrequented places.

NEGRO ATTACKING A CROCODILE.

All the rivers of Guinea are pestered with vast shoals of Crocodiles. On hot days, great numbers of these animals lie basking on the banks

of rivers, and as soon as they observe any one approach, they plunge into the water. M. Adanson says, that in the river Senegal, on the western coast of Africa, he has sometimes seen more than two hundred of them swimming together, with their heads just above water, resembling a great number of trunks of trees floating down the river. In the neighborhood of Thebes, in Egypt, the small boat, in which M. Sonnini sailed up the river, was often surrounded by Crocodiles on a level with the surface. They observed the boat pass by them, but with apparent indifference.

The young of the Crocodile are produced from eggs deposited in the sand, and hatched by the heat of the sun, near the bank of some river or lake. The female is said to be extremely cautious in depositing them unobserved. The general number of eggs is from eighty to a hundred. They are not larger than those of a Goose, and are covered with a tough white skin. She carefully fills up the hole before she leaves them. In each of the two succeeding days she lays as many more, which she hides in a similar manner. The eggs are hatched generally in about thirty days. The fetus of Crocodiles are rolled up within the egg, and at the time when the animals break the shell, they seldom exceed six or seven inches in length. They sometimes break the shell with their head, and sometimes with the serrated tubercles of the back. On emerging into the air, they immediately run into the water, where multitudes of them are devoured by various kinds of fish, and even by the larger animals of their own species. It is, however, in the destruction of their eggs, that the most important service to mankind is affected. The Ichneumon and the Vultures, (the latter of which, in hot climates, collect in immense numbers,) seem peculiarly appointed by Providence to abridge the enormous fecundity of the Crocodiles, and in this capacity they destroy and devour millions of their eggs.

The Crocodile, from its immense size and voracious habits, is doubtless an object of fear, and, by no very uncommon transition of sentiment, it has also gradually become an object of veneration; and offerings are in some countries made to it as to a deity. The inhabitants of Java, when attacked by disease, sometimes build a kind of coop, and fill it with such eatables as they think most agreeable to the Crocodiles. They place the coop upon the bank of a river or canal, in perfect confidence that, by such offerings, they shall be freed from their maladies; and in a full persuasion that, if any person could be so wicked as to take away those viands, such person would draw upon himself the malady, for the cure of which the offering was made. The worship of Crocodiles was indeed a folly among men of ancient date: Herodotus, says, that "among some of the Egyptian tribes, the Crocodiles are held sacred, but that among others, they are regarded as enemies. The inhabitants in the environs of Thebes, and the Lake Mœris, are firmly persuaded of their sanctity; and both these tribes bring up and tame a Crocodile, adorning his ears with rings of precious stones and gold, and putting ornamental chains about his fore feet. They also regularly give him victuals, offer victims to him, and treat him in the most respectful manner while

living, and, when dead, embalm, and bury him in a consecrated coffin."

The king of Saba, on the slave-coast of Africa, has, at this day, two ponds always filled with Crocodiles. In the Rio San Domingo, likewise on the western coast of Africa, M. Brüe was astonished to find the Crocodiles (usually considered ferocious animals) perfectly harmless, insomuch that the children played with them, mounted on their backs, and even beat them, without danger, or any appearance of resentment. This gentleness of disposition, he says, proceeds from their being kept always full fed, and from the attention paid to them by the natives; for in all other parts of Africa, the Crocodiles attack indiscriminately men and animals.

The eggs, and the flesh of the Crocodile, particularly the flesh of

BLOWING UP A CROCODILE.

the tail and belly, are used as food by the Negroes of Africa, and of several of the Indian nations. This flesh is white and juicy, and is considered by these people as peculiarly delicious. But such Europeans as have ventured to eat of it, have been, for the most part, disgusted by the strong musky flavor with which it is impregnated.

Some gentlemen in India blew up a Crocodile, by means of a galvanic apparatus such as is used in blowing up ships and rocks under water.

THE ALLIGATOR, OR AMERICAN CROCODILE.

The principal distinction between the Alligator and the Crocodile, is, that the former has its head and part of the neck more smooth than the latter, and that the snout is considerably more wide and flat, as well as more rounded at the extremity. The length of the full grown Alligator is seventeen or eighteen feet.

ALLIGATOR.

Alligators are natives of the warmer parts of America. It was by an accidental occurrence, that these inhabitants of the New World obtained their appellation. Had the first navigators seen any object that more resembled their form than a lizard, they would probably have adopted the name by which the Indians call them, *Cayman;* but the Spanish sailors remarking their great resemblance to the Lizard, they called the first of them which they saw, *Lagarto*, or Lizard. When the English arrived in America, and heard that name, they called the creature *a-Lagarto*, whence was afterwards derived the word *Alligato*, or Alligator.

Alligators are often seen floating on the surface of the water, like logs of wood, and are mistaken for such by various animals, which by this means they surprise, and draw underneath to devour at leisure. They are said also sometimes to form a hole in the bank of a river, below the surface of the water, and there to wait, till the fish, that are fatigued by the strong current, come into the smooth water to rest themselves, when they immediately seize and devour them. But, as they are not able to obtain a regular supply of food, from the fear in which they are held by all animals, and the care by which these, in general, avoid their haunts, they are able to sustain a privation of it for a great length of time. When killed and opened, stones and other hard substances are generally found in their stomach. In many that Mr. Catesby examined, there was nothing but mucilage and pieces of wood, some of which weighed seven or eight pounds each. The angles of these were so worn down, that he fancied they must have lain in the stomachs of the animals for several months. Two Alligators that Dr. Brickell saw killed in North Carolina, had in their bellies several sorts of snakes, and some pieces of wood; and in one of them was found a stone, that weighed about four pounds.

The voracity of these animals is so great, that they sometimes do not spare even mankind. A short time before M. Navarette was at the Manillas, he was told that, as a young woman was washing her feet in one of the rivers, an Alligator seized and carried her off. Her husband, to whom she had been but that morning married, hearing her screams, threw himself headlong into the water, and,

with a dagger in his hand, pursued the robber. He overtook, and fought the animal with such success, as to recover his wife; but, unfortunately for her brave rescuer, she died before she could be brought to the shore.

Where Alligators are very numerous, they will sometimes endeavor to get into the canoes or boats that pass their haunts during the night. M. de la Borde, at Cayenne, says, he has often seen them attempt to raise themselves against the sides of small boats in that river. He informs us also, that the Alligators which inhabit the lakes of South America, are sometimes left dry, in consequence of the water evaporating. In this case they subsist by catching birds or land animals, or even live a long time without food.

ALLIGATOR ATTACKING A JAGUAR.

Alligators deposit their eggs, like the Crocodiles and Turtles, at two or three different periods of the year, laying from twenty to about twenty-four at each time. It is said that those of Cayenne and Surinam raise a little hillock on the bank of the water, and, hollowing this out in the middle, amass together a heap of leaves and other vegetable refuse, in which they deposit their eggs. These being also covered with leaves, a fermentation ensues, by the heat of which, in addition to that of the atmosphere, the eggs are hatched. The animals generally lay their eggs in the month of April. Multitudes of the eggs are destroyed by Vultures, and immense numbers of the young animals are devoured, as soon as they reach the water, by various species of fish.

It appears that the Alligator, when caught young, may, in some measure be domesticated. Dr. Brickell saw one in a large pond before a planter's house. It remained there nearly half a year, during which time it was regularly fed with the entrails of fowls, and raw meat. It frequently came into the house, where it would remain for a short time and then return again to its shelter in the pond. It is supposed at last to have stolen away to a creek near the plantation: for it was one day missing, and from that time was never afterwards seen.

The voice of these animals is very loud and dreadful. They have an unpleasant and powerful musky scent. M. Pagés says, that near one of the rivers in America, where the Alligators were numerous, their effluvia was so strong as to impregnate his provisions, and even to give them the nauseous taste of rotten musk. This effluvium proceeds chiefly from four glands, two of which are situated in the groin, near each thigh, and the other two at the breast, one under each fore-

leg. Dampier informs us, that when his men killed an Alligator, they generally took out these glands, and, after having dried them, wore them in their hats by way of perfume.

The teeth of Alligators are as white as ivory; and snuff-boxes, chargers for guns, and several kinds of toys, are manufactured from them. The flesh of the young animals is said to be white, and tolerably palatable; but that of the old ones, is, from its strong scent, extremely unpleasant to the palate.

THE COMMON GUANA.

This animal grows to the length of four or five feet. The tail is long and round, the back serrated, and the crest denticulated. The individuals vary much in color, but their prevailing tinge is brownish green. Under the chin they have a pouch capable of great inflation, and by which alone they are easily distinguished from other Lizards.

GUANA, OR GERNA.

The Guana feeds on insects and vegetables, and is an extremely gentle and harmless animal. Its appearance, however, is alarming, especially when agitated by fear or anger. Its eyes seem on fire · it hisses like a serpent, swells out the pouch under its throat, lashes about its long tail, erects the scales on its back, and holds its head, covered over with tubercles, in a menacing attitude. The usual places of its habitation or retreat, are the clefts of rocks, or the hollows of trees; and although it is not naturally resident in the water, yet, on necessity it will continue immersed for a great length of time. In swimming it keeps its legs pressed close to its body, and urges itself forward by its tail.

It is quick in all its motions: it climbs into the trees, and even among the highest branches, with astonishing agility. Around these it will often entwine itself, concealing its head in some of the various foldings of its body.

The females are smaller than the males; their colors and proportions more agreeable, and their appearance is more gentle and pleasing. These usually quit the woods or mountains about two months after the end of winter, for the purpose of depositing their eggs in the sand of the sea-shore. The eggs are always unequal in number, from thirteen to twenty-five. They are longer, but not thicker, than pigeons' eggs. The outer covering is white and flexible. Most travellers say, that these eggs give an excellent relish to sauces, and that their taste is preferable to that of poultry eggs.

During the spring of the year, the male exhibits great attachment towards the female. He defends her even with fury, attacking, with undaunted courage, every animal that seems inclined to injure her; and at this time, though his bite is not poisonous, he fastens so firmly,

that it is necessary either to kill him, or to beat him with great violence on the nose, to make him quit his hold.

The Guana cannot without difficulty be killed by blows, or even by wounds from fire-arms; but it dies almost instantaneously if even a straw be put up his nostrils. This occasions the flow of a few drops of blood, after which the animal expires.

The flesh of the Guana constitutes a principal food of the natives of the Bahama Islands, and of several parts of America, and this animal is hunted by dogs that are trained for the purpose. It is also sometimes ensnared by the following artifice, which has been described by Labat. "We were attended (he says) by a negro, who carried a long rod, at one end of which was fastened a piece of whip-cord, with a running knot. After beating the bushes for some time, the negro discovered our game, basking in the sun, on the dry limb of a tree. He then began whistling with all his might: to which the Guana was wonderfully attentive, stretching out his neck, and turning his head, as if to enjoy it more fully. The negro now approached, still whistling and advancing his rod gently, began tickling, with the end of it, the sides and throat of the Guana, which seemed excessively pleased with the operation; for he turned on his back, and stretched himself out like a cat before the fire, and at length fell asleep. The negro perceiving this, dexterously slipped the noose over his head, and with a jerk brought him to the ground." Notwithstanding, however, the apparent stupidity and gentleness of the Guana, it no sooner finds itself ensnared, than it assumes a great degree of violence. It becomes extremely agitated; the pouch of its throat swells with rage, its eyes glisten, and it extends its wide jaws. But all its efforts are now useless; for the hunter pressing it to the ground, with his whole strength, holds it fast, till he has tied his mouth and legs in such a manner that it is no longer capable either of defence or flight. As soon as the animals are thus secured, their mouths are sewed up, to prevent them from biting; and some of them are carried alive from the Bahama Islands to Carolina for sale; others are salted and barrelled by the natives, for home consumption.

The Guana is found in many parts both of Africa and Asia, and is a very common animal in Surinam, in the woods of Guiana, in Cayenne and Mexico; but it is now become scarce in the West Indies, in consequence of its being there much sought after for the table.

THE NIMBLE LIZARD.

LIZARD.

This elegant little animal, which is known in almost every part of the temperate regions of Europe, seems to be the most gentle and inoffensive of all the Lizard tribe. It is fond of basking in the sun; but, unable to bear excessive heat, in the hottest weather it seeks for shelter. In spring, during fine weather, it may sometimes be seen extended on a sloping green

bank, or on a wall exposed to the sun. In these situations it enjoys the full effects of the reviving warmth; it expresses its delight by gently agitating its slender tail, and its lively and brilliant eyes are animated with pleasure. Should any of the minute animals, on which it feeds, appear, it springs upon them with the quickness of thought; and if any danger occurs, the little creature itself escapes into some place of retreat with equal rapidity. On the least noise it turns suddenly round, drops down, and seems, for a moment, stupified by its fall: or else it suddenly shoots away among the bushes or thick grass. Its great rapidity of motion is chiefly to be observed in warm countries, for in the temperate regions its evolutions are much more languid.

The tail is nearly twice the length of the body, and tapers from the root to the extremity, where it ends in a sharp point. This, from the weakness of the vertebræ, is so brittle as often to snap off on the least roughness in handling. In this case, however, it is sometimes reproduced. When the tail has been split or divided lengthways, each of the portions, in healing, has rounded itself, and thus the animal has had a double tail. One of these has contained the vertebræ, and the other only a kind of tendon in the centre.

For the purpose of seizing the insects on which it feeds, the Nimble Lizard darts out, with astonishing velocity, its forked tongue. This is of a reddish color, and is beset with asperities which are scarcely sensible to the sight, but which are of great use in catching its winged prey. Like most other oviparous quadrupeds, this Lizard is capable of existing for a long time without food. Some of these animals have been kept in bottles, without nourishment, for upwards of six months.

In the beginning of May, the female deposits her eggs, which are nearly spherical, and about five lines in diameter, in some warm situations; as, for instance, at the foot of a wall fronting the south. Here they are hatched by the heat of the sun.

Previously to the breeding season, both the male and female change their skins, and this they again do about the beginning of winter. They pass that season in a state of torpor, more or less complete, according to the rigor of the climate, either in holes of trees, in walls, or in subterranean places.

THE GREEN LIZARD.

In its manners it is as gentle as the Nimble Lizard; and if taken young may, to a certain degree, be tamed. On this account, and from its extremely beautiful appearance, it is in general a favorite animal. In Sweden and Kamschatka, however, it is looked upon by the inhabitants with horror. The Kamtschadales consider it as sent by the infernal dieties, and are anxious to cut it to pieces whenever they meet with it.

When driven to extremity, the Green Lizard will sometimes defend itself even against the attacks of dogs. It springs instantly at the

muzzle of the assailant, and often fixes itself so obstinately, that it will allow itself to be carried off, and even killed, rather than quit its hold.

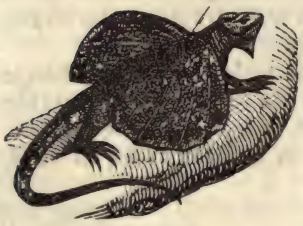
It feeds principally on insects and earth-worms; and is, in every respect, a most active animal, pursuing with wonderful celerity, its insect prey, and when disturbed escaping with great readiness from pursuit. It devours the eggs of small birds, for which purpose it climbs with agility into the highest branches of trees.

It runs with great swiftness; and its first motions, when it springs from among bushes or dry leaves, are often so rapid, as to excite sensations of surprise, or even of fear. In India there is a species called Gecko.

THE GREEN LIZARD OF CAROLINA.

These are very useful animals about the houses in Carolina: they destroy immense numbers of flies, and other troublesome and noxious insects. It is scarcely credible with what industry, agility, and dexterity, they lie in ambush for, follow, and seize their prey. They will sometimes remain motionless for half a day, waiting for the insects on which they feed; and, when one appears, they spring at it with the swiftness of an arrow. So familiar are they, that they enter houses without fear, and, in pursuit of insects, they mount the tables whilst people are eating. They are so cleanly and so beautiful, that they are sufferd to run over the tables, and even upon the plates, without exciting the smallest disgust.

THE FLYING DRAGON.



FLYING DRAGON.

This name is applied to a Lizard with wing-like appendages, which, however, is totally unable to fly.

This characteristic of large spreading wing-like appendages, is not confined to one variety of the lizard, but is found in several different kinds. The name of Flying Dragon, was originally applied to fabulous beings, and seems to have been given to the lizard from mere caprice.

THE CHAMELEON.

Not many animals of the present class have attained greater celebrity than the Chameleon. From the earliest periods, this extraordinary reptile has been metaphorically employed to denote the most abject flattery. It has been considered as always deriving its color from the object on which it was placed, and as having no color of its own.

The Chameleon is a native of India, the Indian Islands, Africa, and

some of the warmer parts of Spain and Portugal, as well as of several of the countries of South America. Its usual length is about ten inches; and that of the tail is nearly the same.

Though an animal extremely ugly and disgusting in its appearance, it is perfectly harmless. It feeds only on insects, for which the structure of its tongue is peculiarly adapted, being long and missile, and furnished with a dilated, glutinous, and somewhat tubular tip. By means of this it seizes upon insects with the greatest ease, darting it out, and instantaneously retracing it, with the prey secured on its tip, which it swallows whole.

CHAMELEON.

The skin is covered with small warts or granulations, each about the size of a tolerably large pin's head; and along the middle of the back, there is a row of serratures.

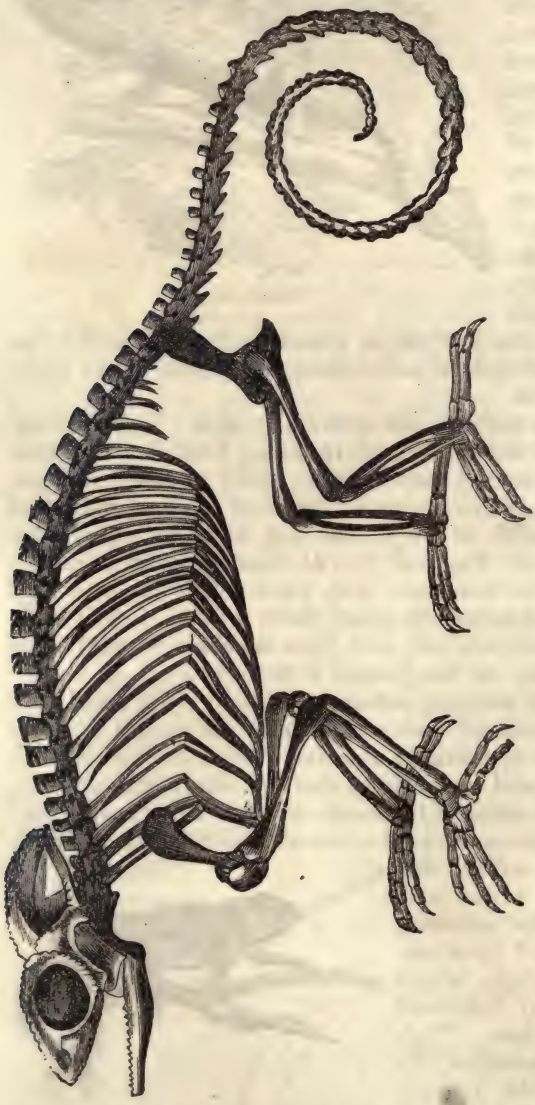
All the motions of this creature are extremely slow: in travelling from one branch of a tree to another, and in taking food, it may rather be said to lie in ambush among the leaves, in order to catch such insects as may alight upon, or come within reach of its long adhesive tongue, than to go in search of prey. Its feet have each five toes, which are situated three one way and two another, in order to enable it to lay firmly hold of the branches: but, whenever it happens that these are too large for the animal to grasp them with its feet, it coils round them its long, prehensile tail, and fixes its claws strongly into the bark. When walking on the ground it steps forward in an extremely cautious manner, seeming never to lift one foot, until it is well assured of the firmness of the rest. From these precautions, its motions have a ridiculous appearance of gravity, when contrasted with the smallness of its size, and the activity that one might expect in an animal so nearly allied to some of the most active in the creation.

The eyes of the Chameleon are each covered by a rough membrane, in appearance not much unlike shagreen, which is attached to the eyeball, and follows all its motions. This membrane is divided by a narrow, horizontal slit, through which the bright pupil, as if bordered with burnished gold, is seen. This wonderful structure resembles, in some degree, the artificial defence employed by the Laplanders and other northern nations, for defending their eyes against the excessive reflection of light from the surface of the snow, by means of a narrow slit. in a thin and hollow piece of

THE CHAMELEON CATCHING FLIES.

wood. The eyes of the Chameleon have another singular property, that of looking at the same instant in different directions. One of them may frequently be seen to move when the other is at rest; or one will be directed forward, whilst the other is attending to some object behind; or in a similar manner upward and downward.

The Chameleon has likewise a power of inflating most parts of its body, so as to increase its general bulk, and to give a full and round appearance to such parts as are naturally flaccid and lank. This inflation is produced by slow and irregular efforts; and proceeds occasionally to such a degree, as to double the usual size of the animal, extending even into the feet and tail.



SKELETON OF A CHAMELEON.

The color of the Chameleon, is naturally green; but it is susceptible of many shades, and particularly of three very distinct ones: Saxon green, deep green, and a shade bordering on blue and yellow green. When free, in health, and at ease, it is of a beautiful green; some parts excepted, where the skin, being thicker and more rough, produces gradations of brown, red, or light gray. When the animal is provoked, in open air, and well fed, it becomes blue green; but when feeble or deprived of free air, the prevailing tint is yellow-green. Under other circumstances, and especially at the approach of one of its own species, no matter of which sex, or when

surrounded and teased by a number of insects thrown upon him, he then, almost in a moment takes alternately the three different tints of green. If he be dying, particularly of hunger, the yellow is at first predominant; but in the first stage of putrification this changes to the color of dead leaves.

The causes of these changes are various: and first, the blood of the Chameleon is of a violet blue, which color it will preserve for some minutes on linen or paper, especially on such as have been steeped in alum-water. In the second place, the different tunicles of the vessels are yellow, as well in their trunks as in their ramifications. The epidermis, or exterior skin, when separated, is transparent, without any color; and the second skin is yellow, as are all the little vessels that touch it. Hence it is probable that the change of color depends upon the mixtures of blue and yellow, from which result different shades of green. Thus, when the animal, healthy and well fed, is provoked, its blood is carried in greater abundance from the heart towards the extremities; and swelling the vessels that are spread over the skin, its blue color subsides, and, with the yellow of the vessels, produces a blue green that is seen through the epidermis. When, on the contrary, the animal is impoverished and deprived of free air, the exterior vessels being more empty, their color prevails, and the animal becomes of a yellow-green till it recovers its liberty, is well nourished, and without pain, when it regains its former color; this being the consequence of equilibrium in the liquids, and of a due proportion of them in the vessels.

CHAMELEON.

The Chameleon retires, in cold weather, into holes of rocks, and other retreats, where it is supposed to become torpid, till the return of the warmth restores the languid energy of its functions. The female not long afterwards, emerges from this confinement, and lays from nine to twelve eggs. These are oval, and seven or eight lines in their greatest diameter. They are covered with a soft parchment-like membrane.

THE SALAMANDER.

No animal of the present tribe, except the Crocodile, has excited so much notice as the Salamander. Whilst even the hardest bodies are unable to resist the action of fire, the generality of mankind have given credit to the absurd stories, that have for ages been circulated, of this little Lizard not only being able to withstand the effects of this powerful element, but even to extinguish it.

In addition to this, the Salamander was erroneously considered a poisonous reptile, and has been generally held in terror.

Shady woods, high mountains, or the banks of unfrequented rivulets, are the usual retreats of these animals; and they are not often seen except during wet weather. In winter they lie concealed in hollows

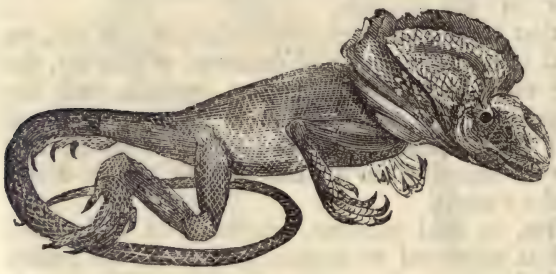
about the roots of old trees, in subterraneous recesses, or the cavities of old walls, where several of them have sometimes been discovered, collected and twisted together. They are frequently to be seen in the water, where they are able to live as on land. Their principal food consists of insects, snails, and worms. Their pace is slow, and their manners sluggish.

When the Salamander is at rest, it often rolls itself into a spiral form like a serpent. Whenever it is handled, it covers itself suddenly over with its milky fluid; and when crushed, or even when squeezed, it emits a peculiar and offensive odor. When struck, it erects its tail, and becomes, for some time, altogether motionless.

It is extremely tenacious of life, and is not to be killed by blows or wounds without difficulty; but if wetted with vinegar, or sprinkled with powdered salt, it soon dies in convulsions. This is likewise the case with some other Lizards, and with most worms.

THE FRILLED LIZARD.

This extraordinary Lizard, a native of Australia, is at once to be known by an expanse of skin, supported by a crescent-shaped cartilage on each side of the neck, forming an expanded frill, capable of being folded up or spread out; the edge of this frill is serrated, and the whole is covered with small keeled scales; the head is short; the tail long: the feet well adapted for climbing. There are femoral pores. When fully grown, this species measures nearly three feet in total length, and is arboreal in its habits. The general color is yellowish brown variegated with black; tongue and inside of the mouth yellow.



FRILLED LIZARD.

HEAD AND FRILL, OF FRILLED LIZARD.

This species resembles the Flying Dragon described on page 530, except that the frill of this lizard is not so much extended as the wings of the Dragon.

THE WATER EFT, OR NEWT.

This Lizard, which is very common in stagnant and muddy waters in this country, is six or seven inches in length, and is entirely covered, except on the belly, with small warts. The under parts are of a bright yellow color, and the upper mostly black brown, spotted with black. It resides altogether either in the water, or in very damp places; and its tail, being flattened perpendicularly, serves it as a rudder in swimming. It is usually seen crawling along the bottom, but it now and then rises, with a wriggling motion to the surface.

THE NEWT.

To the Salamander has been attributed the fabulous property of being able to live in the midst of fire; whilst, on the contrary, the Eft has been discovered really to possess the opposite quality, of preserving its existence in the midst of ice. It is sometimes caught by the sudden formation of ice in the ditches or ponds that it inhabits; here it remains in a torpid state, till, at the return of spring, its prison becomes melted, when it recovers its liberty, and its powers of motion. Sometimes, even in summer, Efts have been found enveloped in lumps of ice taken from ice-houses; and in these they must have remained without either food or motion, from the commencement of the frost.

When the young-ones first come into the world, they have somewhat the structure of fishes: the feet are short, and the shoulders are furnished with a kind of small fringed fins. These appear not much unlike feathers, and are attached to a kind of notched cartilaginous half rings, usually about four on each side. As the animals become larger, these processes diminish in size, and at last disappear.

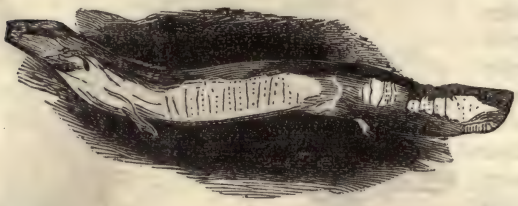
Almost all the animals of the lizard tribe, change their skins once or twice a year, but the Efts do this much more frequently. From seven individuals kept in a large jar of water for many months, it appears, that they generally perform this operation at the end of every fortnight or three weeks.

The teeth of these animals are so small, as scarcely to be perceptible. They feed on flies and various other insects, on the spawn of Frogs, and on the vegetables of marshes, ponds, and ditches. They will frequently snap at the angler's bait, and are thus often caught by his hook.

It has been satisfactorily ascertained, by various experiments, that the Eft has no venomous qualities whatever.

THE PROTEUS.

The Proteus breathes in two ways—by lungs and by gills, the latter organs appearing in the form of two tufts, one on each side of the neck, just above the fore limbs. The circulation of the blood in these branchial tufts can easily be seen with a microscope of moderate power. These tufts are of a rather deeper pink tinge than the remainder of the body, which is of a very pale flesh-color. Exposure to light darkens the tints both of gills and body. It bears some resemblance to the young of the Newts, which are furnished with branchial tufts, which they loose upon attaining maturity, and was therefore for some time thought to be the young of some unknown reptile. It has, however, been proved to be a perfect animal, and has been found of all sizes.



THE PROTEUS.

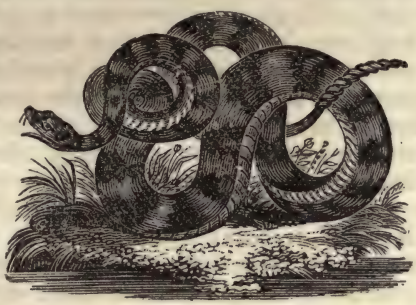
The blood discs of this animal are exceedingly large; so large, indeed, as almost to be distinguished by the naked eye. When in captivity, its movements are slow and eel-like, nor does it seem to make much use of its almost rudimentary limbs.

It has usually been found on the soft mud of a small lake in the grotto of Madalena. It is not always present, and has been conjectured to be the inhabitant of some unknown subterranean body of water, and to have been forced through the crevices of the rocks. Besides the grotto of Madalena at Adelsburg they have also been found at Sittich, thirty miles distant thrown up from a subterranean cavity

SERPENTS.

OF THE RATTLE-SNAKE TRIBE.

THE animals of this tribe, which are few in number, are all furnished with poisonous fangs; but their bite is not fatal, unless they be much irritated. They are confined to the warmer parts of America, where they prey on the smaller species of birds, lizards, and insects. They give notice of their approach by the rattle at the extremity of their tail; this rattle is composed of hollow, membranaceous articulations, that annually increase in number till they amount to about forty. The head is broad, and covered with large carinated scales, or such as have a prominent middle line · the snout is rounded and obtuse.



THE RATTLE-SNAKE.

THE BANDED RATTLE-SNAKE.

This, the most dreaded of all serpents, is found both in North and South America. Providence has given to mankind a security against its bite; for it generally warns the passenger of its vicinity by the rattling of its tail. In fine weather the notice is always given, but not always in rainy weather: this inspires the Indians with a dread of travelling among the woods in wet seasons. In addition to this circumstance, the odor of the Rattlesnake is so extremely fetid, that, when it basks in the sun, or is irritated, it is often discovered by the scent, before it is either seen or heard.

RATTLE-SNAKE STRIKING.

The Rattle-snake usually moves with its head on the ground; but, if alarmed, it throws its body into a circle, coiling itself with its head in the centre erect, and with its eyes flaming in a most terrific

manner. Happily, it may easily be avoided: it is slow in pursuit, and has not the power of springing at its assailants.

Its tongue is frequently darted out and retracted with great agility. Besides the fangs with which Rattle-snakes kill their prey. there is another kind of teeth much smaller, and situated in both jaws: these serve for catching and retaining it. There are no grinders; for Rattle-snakes do not chew their food, but always swallow it whole.

A farmer was one day mowing with his negroes, when he accidentally trod on a Rattle-snake, that immediately turned upon him, and bit his boot. At night, when he went to bed, he was attacked with sickness: he swelled, and, before a physician could be called in, he died. All his neighbors were surprised at this sudden death, but the body was interred without examination. A few days afterwards, one of the sons put on his father's boots, and, at night, when he pulled them off, he was seized with the same symptoms, and died on the following morning. The medical man arrived, but, unable to divine the cause of so singular a disorder, he seriously pronounced both the father and the son to have been bewitched. At the sale of the effects, a neighbor purchased the boots, and on putting them on, experienced the like dreadful symptoms with the father and son. A skilful physician, however, who had heard of the preceding affair, being sent for, he suspected the cause, and, by applying the proper remedies, recovered his patient. The fatal boots were now carefully examined, and the two fangs of the snake were discovered to have been left in the leather, with the poison bladders adhering to them. They had penetrated entirely through, and both the father and son had imperceptibly scratched themselves with their points in pulling off the boots.

If not provoked, these animals are perfectly inoffensive to mankind, being so much alarmed at the sight of men, as always, if possible, to avoid them, and never themselves commencing an attack.

Mr. St. John once saw a tamed Rattle-snake, as gentle as it is possible to imagine a reptile to be. It went to the water and swam whenever it pleased; and when the boys to whom it belonged called it back, their summons was readily obeyed. It had been deprived of its fangs. They often stroked it with a soft brush; and this friction seemed to cause the most pleasing sensations, for it would turn on its back to enjoy it, as a cat does before the fire.

Rattle-snakes are viviparous, producing their offspring, generally about twelve in number, in the month of June; and by September these acquire the length of twelve inches. It has been well attested that they adopt the same mode of preserving their young-ones from danger as that attributed to the European Viper, receiving them into their mouth and swallowing them. M. de Beauvois declares that he was an eye-witness to the process. He saw a large Rattle-snake, which he had disturbed in his walks: it immediately coiled itself up, opened its jaws, and in an instant five small ones that were lying by it, rushed into its mouth. He retired in order to watch the snake, and in a quarter of an hour saw her again discharge them. He then

approached a second time, when the young-ones rushed into its mouth more quickly than before, and the animal immediately moved off and escaped.

The Rattle-snake is known to devour several of the smaller species of animals, and, by many persons, is considered to be endowed with the power of fascinating its prey, until they even run into its jaws. Professor Kalm states, that this Snake will frequently lie at the bottom of a tree on which a Squirrel is seated. He fixes his eyes upon the little animal, and from that moment it cannot escape: it begins a doleful outcry; runs up the tree a little way, comes down again, then goes up, and afterwards comes still lower. The Snake continues at the bottom of the tree, with his eyes fixed on the Squirrel; and his attention is so entirely taken up, that a person accidentally approaching may make a considerable noise, without so much as the Snake's turning about. The Squirrel comes lower, and at last leaps down to the Snake, whose mouth is already wide open for its reception. The little animal then with a piteous cry, runs into his jaws, and is swallowed.

In summer the Rattle-snakes are generally found in pairs: in winter they collect in multitudes, and retire into the ground, beyond the reach of the frost. Tempted by the warmth of a spring day, they are often observed to creep out in a weak and languid state. Mr. Pennant mentions, that a person has seen a large piece of ground covered with them, and that he killed, with a rod, between sixty and seventy; till, overpowered with the stench, he was compelled to retire.

OF THE BOA TRIBE IN GENERAL.

This is a noble tribe of animals, the largest and strongest of the serpent race. They are destitute of venom, never attack but from necessity, always engage with open courage, and conquer only by superior strength.

Three of the species are found in Asia; the rest are confined to the warmer parts of the New Continent.

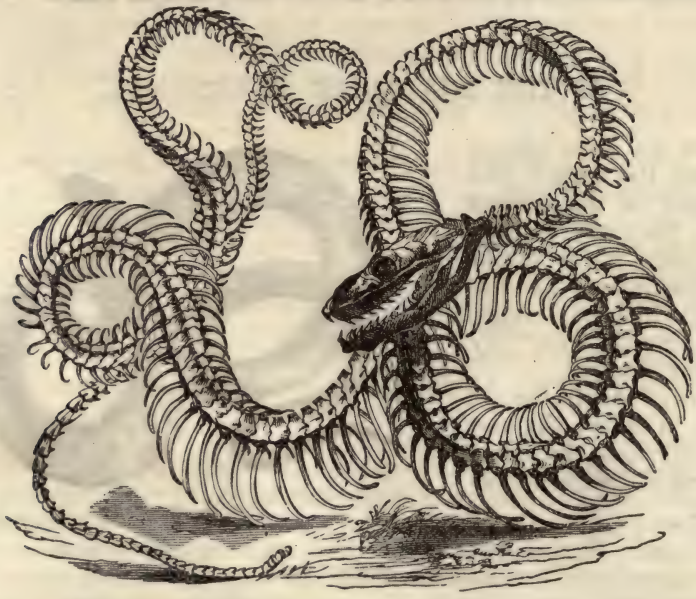
THE BOA.

THE GREAT BOA.

This immense animal, the largest of all the serpent tribe, is frequently from thirty to forty feet in length, and of proportionate thickness. A gentleman, who had some extensive mercantile concerns in America, informs us, that he one day sent out a soldier, with an

Indian, to kill some wild-fowl; and in pursuing their game, the Indian who generally went before, sat down upon what he supposed to be the fallen trunk of a tree. But the monster beginning to move, the poor fellow perceived what it was that he had thus approached, and dropped down in an agony. The soldier who at some distance saw what had happened, levelled his piece at the Serpent's head, and shot it dead; then, going up to the relief of his companion, found that he was also dead from the fright. On his return, he related what had happened; the animal was ordered to be brought,

GREAT BOA.

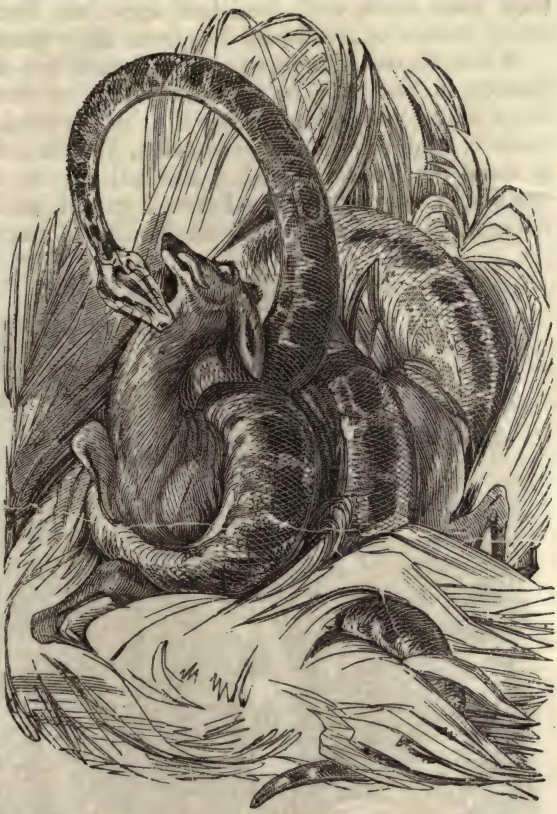


SKELETON OF A BOA.

and it was found to be thirty-six feet long. The skin was stuffed, and sent to the cabinet of the Prince of Orange.

A Malay prow was making for the port of Amboyna; but the pilot

finding she could not enter it before dark, brought her to anchor for the night close under the island of Celebes One of the crew went on shore into the woods, and on his return, lay down, as it is supposed, to sleep on the beach. In the course of the night he was heard, by his comrades, to scream out for assistance. They immediately went on shore, but it was too late; for an immense snake of this species had crushed him to death. The attention of the monster being entirely occupied by his prey, the people went boldly up to it, cut off its head, and took both it and the body of the man on board their boat. The snake had seized the man by the right wrist, where the marks of the fangs were very distinct; and the mangled corpse bore evident signs of having been crushed by the monster's twisting itself round the head, neck, breast, and thigh. The length of the snake was about thirty feet, and its thickness equal to that of a moderate-sized man.



BOA CRUSHING A DEER.

We have been assured by travellers, that these snakes are sometimes found with the body of a stag in their gullet; while the horns, which they are unable to swallow, are seen sticking out at their mouths.

It is happy for mankind that their rapacity is often their own punishment; for, whenever they have gorged themselves in this manner, they become torpid, and may be approached and destroyed with safety. Patient of hunger to a surprising degree, whenever they seize and swallow their prey, they are, like surfeited gluttons, unwieldy, stupid, helpless, and sleepy. They at that time seek for some retreat, where they may lurk for several days together, and digest their meal in safety. The least effort then will destroy them; they scarcely can make any resistance; and equally unqualified for flight or opposition, even the naked Indians do not fear to assail them.

But it is otherwise when this sleeping interval of digestion is over; they then issue, with famished appetites, from their retreats, while every animal of the forest flies from their presence.

When Captain Stedman was on board one of his boats on the river Cottica in Surinam, he was informed, by one of his slaves, that a large snake was lying among the brush-wood on the beach, not far distant; and, after some persuasion, he was induced to land, in order to shoot it. At the first shot, the ball missing the head, went through the body: when the animal struck round, and with such astonishing force, as to cut away, with the facility of a scythe mowing grass, all

BOA SEIZING A BIRD.

the underwood around; and, by flouncing his tail, caused the mud and dirt in which he lay, to fly to a considerable distance, over the heads of the men that were with him. They started back some way, but the snake was quiet again in a few minutes. Captain Stedman again fired, but with no better success than before; and the animal sent up such a cloud of dust and dirt, as he had never seen but in a whirlwind: this caused them once more suddenly to retreat. After some persuasion, he was induced, though much against his inclination, being exceedingly weak from illness, to make a third attempt. Having, therefore, once more discovered the snake, they discharged their

pieces at once, and shot him through the head. The negro brought a boat-rope to drag him to the canoe, which was lying on the bank of the river. This proved no easy undertaking, since the huge creature, notwithstanding his being mortally wounded, still continued to writhe about in such a manner as to render it dangerous for any person to approach him. The negro made a running noose on the rope, and, after some fruitless attempts, threw it over his head with much dexterity; and now, all taking hold of the rope, they dragged him to the beach, and tied him to the stern of the canoe to take him in tow. Being, however, still alive, he there kept swimming like an eel. His length was more than twenty-two feet.

BOA SEIZING A TRAVELLER.

When they came to one of their stations, they hauled him on shore, in order to skin him and take out the oil. To effect this, one of the negroes, having climbed up a tree with the end of a rope, let it down over a strong forked branch, and the others hoisted up the snake, and suspended him from the tree. This done, the former negro, with a sharp knife between his teeth, left the branch, and clung fast upon the monster, which was still writhing, and began his operations by ripping it up, and stripping down the skin as he descended. "Though I perceived (says the captain) that the animal was no longer able to do him any injury, I confess I could not, without emotion, see a man stark naked, black and bloody, clinging with his arms and legs round the slimy and yet living monster." The negroes cut the animal in pieces, and would have eaten it, had they not been refused the use of the kettle to boil it in. The bite of this snake in not venomous; nor is the animal believed to bite at all, from any other impulse than that of anger.

THE ANACONDA.

ANACONDA.

The Boa Scytale, or Anaconda (which name appears to be of Ceylonese origin) is found in South America. It has scaly plates from the eyes to the end of the muzzle: no pits on the jaw-plates. This serpent is not venomous nor known to injure man; however, the natives stand in great fear of it, never bathing in waters where it is known to exist. Its common haunt, or rather domicile, is invariably near lakes, swamps and rivers; likewise close to wet ravines produced by inundations of the periodical rains. Fish, and those animals which repair there to drink, are the objects of its prey. The creature lurks watchfully under cover of the water, and, whilst the unsuspecting animal is drinking, suddenly makes a dash at the nose, and with a grip of its back-reclining double range of teeth never fails to secure the terrified beast beyond the power of escape.

THE BOA CENCHRIA, OR ABOMA.

In the Boa Cenchria there are scaly plates on the muzzle, and pits or dimples upon the plates of the jaws. The size attained by the Boa is often very great, and larger individuals than any now seen occurred formerly, before their ancient haunts had been invaded by human colonization. It is found in South America.

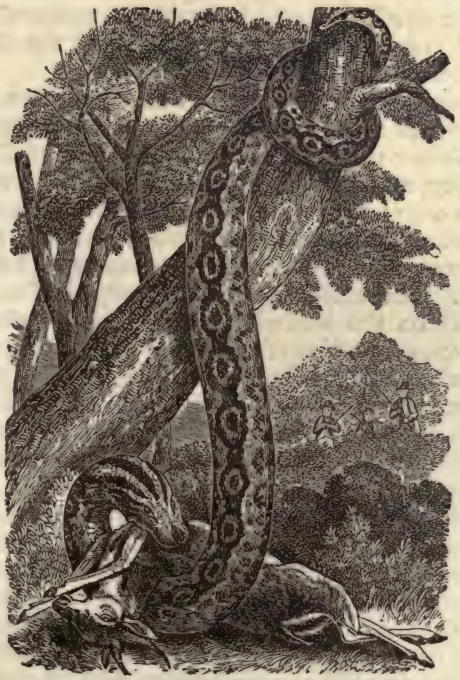
THE BOA CANINA.

The Boa Canina is of a greenish color, with white irregular, longish spots somewhat annularly disposed. The Portuguese relate that these serpents sometimes remain in the houses, doing no harm till irritated, when they at last bite and inflict a wound full of danger, not from injected poison, for the serpent has none, but on account of the injury sustained by the nerves from the very sharp, slender, and long teeth. Great inflammation follows, and the symptoms are aggravated by terror, so that a gangrene is the consequence unless the proper remedies are applied.

THE TIGER PYTHON.

The Tiger Python is found in Africa and India. It kills its prey by constriction, like the Boa, and sometimes grows to an enormous size. It was probably a small specimen of this snake that was so unceremoniously dislodged from its hiding place among rocks by Mr. Cumming and his black servant, during one of his hunting excursions in Africa.

There are several different species of the Python found in Africa, all large and constrictors. Some of them are variegated with beautiful colors.



TIGER PYTHON.

THE EMPEROR BOA.

The Emperor Boa is a Mexican variety, differing but slightly from the South American Boas.

OF THE SNAKES IN GENERAL.

This tribe comprises a great number of species, (nearly *two hundred*) which differ from each other very greatly, both in size and habit. About one-fifth of the whole have been discovered to be poisonous. These are, in general, distinguishable from the rest, by their large, flattish, and somewhat heart-shaped heads, and by having proportionally shorter bodies. The harmless species have, for the most part small heads, with more extended bodies.

THE COMMON VIPER, OR ADDER.

These serpents do not often exceed the length of two feet, though they are sometimes found above three. The ground color of their bodies is a dirty yellow, deeper in the female than in the male. The back is marked throughout with a series of rhomboidal black spots, joined to each other at the points; and the sides have triangular ones. The belly is entirely black.

The apparatus of poison in the Viper is very similar to that in the Rattle-snake, and all the other poisonous serpents. The symptoms that follow the bite, are an acute pain in the wounded part, with a swelling, at first red, but afterwards livid, which, by degrees spreads to the adjoining parts; with great faintness, and a quick, though low, and sometimes interrupted pulse; sickness at the stomach, with bilious, convulsive vomitings, cold sweats, and sometimes pain about the navel. The most esteemed remedy is common salad-oil, thoroughly rubbed on the wounded part. This is always used by the viper-catchers. The bite of the Viper in this country, although it produces a painful and troublesome swelling, is rarely attended with any other bad consequence.

We are told, however, that in the presence of the Grand Duke of Tuscany, while the philosophers were making elaborate dissertations on the danger of the poison taken inwardly, a viper-catcher, who happened to be present, requested that a quantity of it might be put into a vessel, and then, with the utmost confidence, and to the astonishment of the whole company, drank it off in their presence. Every one expected the man instantly to drop down dead; but, says the relator of the story, they soon perceived their mistake, and found that, taken inwardly, the poison was as harmless as water.

These animals are viviparous, and produce their offspring towards the close of summer. The eggs, which are hatched in the womb, are usually ten or twelve only in number, and chained together somewhat like a string of beads. When the young-ones have burst the shell, they creep from their confinement into the open air, where they continue for several days without taking any food. The Rev. Mr. White, of Selborne, in company with a friend, surprised a large female Viper, which, as she lay on the grass, basking in the sun, seemed very

heavy and bloated. They killed and opened her, and found in the abdomen fifteen young-ones, about the size of full-grown earth-worms. This little fry issued into the world with the true Viper spirit about them, showing great alertness as soon as they were disengaged from the body of the parent. They twisted and wriggled about, set themselves up, and gaped very wide when touched with a stick; exhibiting manifest tokens of menace and defiance, though as yet no fangs were to be discovered, even by the help of glasses.

That young Vipers, for some time after their birth, retreat, when suddenly alarmed, into the mouth of the female, in the same manner as the young of the Opossum do into the abdominal pouch of their parent, seems a fact satisfactorily ascertained. Vipers attain their full growth in about seven years. Their food consists of reptiles, worms, or young birds, which they swallow whole, though it sometimes happens that the morsel is thrice the thickness of their own body.

They are capable of supporting long abstinence: a Viper was kept more than six months in a box without food; during which time its vivacity was not lessened. When at liberty these animals remain torpid throughout the winter: yet, when confined, they have never been observed to take their annual repose.

THE COMMON, OR RINGED SNAKE.

The Common, or Ringed Snakes are well-known inhabitants of moist and warm woods, on the dry banks of which they are often seen during the summer, either sleeping or basking themselves. They are harmless and inoffensive animals, being totally destitute of every means of injuring mankind.

THE RINGED SNAKE.

In winter these Snakes conceal themselves, and become nearly torpid; re-appearing in spring, when they uniformly cast their skins. This is a process which they also seem to undergo in the autumn.

It would be a most entertaining sight, could a person be an eye-witness to such a feat, and see the Snake in the act of changing its garment. As the convexity of the eyes in the slough is not inward, that circumstance alone is a proof that the skin has been turned; not to mention that now the inside is much darker than the outer. Thus it appears that Snakes crawl out of the mouth of their own sloughs, and quit the tail-part last, just as Eels are skinned by a cook-maid. While the scales of the eyes are becoming loose, and a new skin is

forming, the creature, in appearance, must be blind, and must feel itself in a very awkward and uneasy situation.

Several instances have occurred of the Common Snake being in some degree domesticated. Mr. White says that he knew a gentleman who had one in his house quite tame. Though this Snake was usually as sweet in its person as any other animal, yet, whenever a stranger, or a Dog or Cat entered, it would begin to hiss, and would soon fill the room with a stench so nauseous as to be almost insupportable.

These animals prey on Frogs, Insects, Worms, and Mice; for the former of which they often go into the water, where they swim with great elegance. After a Snake has devoured a tolerable large Frog, or a small bird, its prey will be seen to form a knot in its body; and it then becomes so stupid and inactive as easily to be caught.

The Common Snakes are said to be particularly fond of milk; so much so, that they will occasionally creep into dairies to drink the milk from the vessels. It is even said that they will twine themselves round the legs of Cows, in order to reach their udders.

THE HOODED, OR SPECTACLE SNAKE.

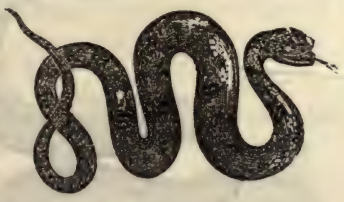
When it is irritated or preparing to bite, this animal erects its body, bends down its head, and seems, as it were, hooded by the expanded skin of the neck: hence its name of *Cobra de Capello,* or Hooded Serpent. It opens its mouth, exhibiting its sharp poisonous fangs; and then springs on its enemy with great agility.

From its frequently moving along with a great part of its body erect, and with its head in continual action, as if looking around with great circumspection, this species in India is esteemed the emblem of prudence. It is also an object of superstitious veneration among the Gentoo Indians, founded on some traits of legendary mythology: they seldom name it without adding some epithet, such as the royal, the good, the holy. Some of the Gentoos are happy when they see it crawling about their houses; though they are liable to great injury from its bite. This is sometimes mortal in two or three hours, especially if the poison has penetrated the larger vessels or muscles. A dog bitten by a Hooded Snake died in twenty seven minutes; and another survived fifty-six minutes. A chicken died in less than half a minute, though others survived a couple of hours; depending, probably, on the heat of the weather, and the condition of the serpent at the time.

In India the Hooded Snake is carried about in a basket, to be publicly exhibited as a show, being first deprived of its fangs, in order to secure the men from the danger of its bite. At the sound of a flageolet it is taught to assume a kind of dancing attitude and motions, which it continues as long as its master continues his music.

THE BLACK SNAKE.

The activity of these animals is astonishing, for, in speed, they will sometimes equal a horse. Their different motions are very diverting: they will at times climb the trees in quest of tree-frogs; or, for other prey, they will glide at full length along the ground. On some occasions, they present themselves half erect, and in this posture their eyes and their heads appear to great advantage. The former display a fiery brightness, by means of which we are told they are able to fascinate birds and the smaller quadrupeds, in a manner similar to the Rattle-snake. Their body is said to be so brittle, that if, when pursued, they get their head into a hole, and a person seize hold of the tail, this will often twist itself to pieces.



BLACK SNAKE.

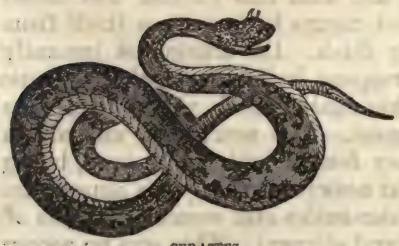
The Black Snake is sometimes bold enough to attack mankind, but it may be driven off by a smart stroke from a stick, or whatever other weapon he may chance to have in his hand. When the snake overtakes a person who has endeavored to escape, (not having had courage enough to oppose it,) it is said to wind itself round his legs in such a manner as to throw him down, and then to bite him in the leg, or wherever else it can lay hold of, and run off again.

The following description of a contest between the Black Snake, and another species, is extracted from Mr. St. John's Letters of an American Farmer:—"As I was one day sitting, solitary and pensive, in the arbor, my attention was engaged by a strange sort of rustling noise, at some paces distant. I looked all around without distinguishing any thing, until I climbed up one of my great hemp-stalks; when, to my astonishment, I beheld two snakes of considerable length, the one pursuing the other with great celerity, through a hemp stubble field. The aggressor was of the black kind, six feet long; the fugitive was a Water-snake, nearly of equal dimensions. They soon met, and, in the fury of their first encounter, appeared in an instant firmly twisted together; and, whilst their united tails beat the ground, they mutually tried with open jaws to lacerate each other. What a fell aspect did they present! Their heads were compressed to a very small size; their eyes flashed fire; and after this conflict had lasted about five minutes, the second found means to disengage itself from the first, and hurried towards the ditch. Its antagonist instantly assumed a new posture, and half creeping, half erect, with a majestic mien, overtook and attacked the other again, which placed itself in a similar attitude, and prepared to resist. The scene was uncommon and beautiful, for thus opposed, they fought with their jaws, biting each other with the utmost rage; but notwithstanding this appearance of mutual courage and fury, the Water-snake still seemed desirous of retreating towards the ditch, its natural element. This was no sooner

perceived by the keen-eyed black one, than, twisting its tail twice round a stalk of hemp, and seizing its adversary by the throat, not by means of its jaws, but by twisting its own neck twice round that of the Water-snake, he pulled it back from the ditch. To prevent a defeat, the latter took hold likewise of a stalk on the bank, and, by the acquisition of that point of resistance, became a match for his fierce antagonist. Their eyes appeared on fire, and ready to start out of their heads. At one time the conflict seemed decided; the Water-snake bent itself into great folds, and by that operation rendered the other more than commonly outstretched; the next minute the new struggles of the black one gained an unexpected superiority, it acquired two great folds likewise, which necessarily extended the body of its adversary, in proportion as it had contracted its own. These efforts were alternate: victory seemed doubtful, inclining sometimes to one side, sometimes to the other; until at last the stalk to which the Black Snake was fastened, suddenly gave way, and, in consequence of this accident, they both plunged into the ditch. The water did not extinguish their vindictive rage, for by their agitations I could still trace, though I could not distinguish, their attacks. They soon re-appeared on the surface, twisted together, as in their first onset: but the Black Snake seemed to retain its wonted superiority; for its head was exactly fixed above that of the other, which it incessantly pressed down under the water, until its opponent was stifled, and sunk. The victor no sooner perceived its enemy incapable of further resistance, than, abandoning it to the current, it returned to the shore and disappeared.'

WATER-SNAKE.

THE CERASTES.



CERASTES.

The Cerastes is a well-known snake in Egypt, and derives its name from the horny scale over each eyebrow. Bruce mentions that the Cerastes can spring several feet in any direction; but his description of the stratagems employed by it, "to surprise any one who is too far from it," is probably more fanciful

than correct, as snakes do not attack unless suddenly surprised or irritated. The size of the Cerastes is by no means great, as its average length is only eighteen inches. The snake-charmers of Egypt employ these reptiles precisely as their brethren of India employ the Cobra di Capello.

THE AMPHISBÆNA.

The Amphisbæna, or *Double-Walkers*, are a still smaller group, intermediate in some respects between the true serpents and slow-worms. They derive their name from the power of moving either backwards or forwards with equal facility. The two extremities of the body are so much alike, that they would not be distinguished by a superficial observer, the eyes being so very small as sometimes to appear wanting; the whole body is of nearly equal diameter. This group is restricted to the warmest parts of South America. Notwithstanding the common idea of its venomous properties, it is quite harmless, and subsists on ants and other small insects. It has not the power of separating the bones of the jaws, which distinguishes the true serpents.

AMPHISBÆNA.

FISHES.

APODAL FISH.

OF THE EEL TRIBE IN GENERAL.

THE Apodal Fish, of which the Eel forms the first Linnean tribe, in their appearance and manners, approach, in some instances, very nearly to the serpents. They have a smooth and slippery skin, and are in general naked, or covered only with small, soft, and distant scales. Their bodies are long and slender, and they are supposed to live entirely on animal substances.

GROUP OF FISHES.

There are about nine species, most of which are found only in the seas. One of these frequents our fresh waters, and three others occasionally visit our shores.

THE COMMON EEL.

The Common Eel evidently forms a connecting link, in the chain of nature, between the serpents and the fishes. It possesses not only the serpent form, but also many of the habits of serpents.

COMMON EEL.

The Eel is frequently known to quit its own element, and to wander, in the evening or night, over meadows, in search of snails and other prey, or to other ponds for change of habitation. This will account for Eels being found in waters that have not been suspected to contain them.

The usual haunts of Eels are in mud, among weeds, under the roots or stumps of trees or in holes in the banks or the bottom of rivers. They are partial to still waters, and particularly to such as

are muddy at the bottom. Here they often grow to an enormous size, sometimes weighing fifteen or sixteen pounds.

When kept in ponds, these fish had been known to destroy young ducks. Eels seldom come out of their hiding-places except in the night, during which time they are caught with lines that have several baited hooks. In winter they bury themselves deep in the mud, and, like the serpent tribe, remain in a state of torpor. They are so impatient of cold, as eagerly to take shelter even in a wisp of straw, if flung into a pond in severe weather; and this has sometimes been practised as a mode of catching them.

Eels are viviparous, or produce living offspring. They are so tenacious of life, that their parts will continue to move for a considerable time after they are skinned and cut into pieces; and no other fish whatever will live so long out of water as these. They are best in season from May to July; but they may be caught with a line till September. When the water is thick with rains, they may be fished for during the whole day; but the largest and best are caught by night-lines.

THE CONGER EEL.

When at its full size, the Conger Eel has sometimes been known to measure more than ten feet in length, and from fourteen to sixteen inches in circumference. It is one of the most dangerous and most powerful enemies with which the fishermen of the British Islands have to contend. Being usually caught by a hook and line, it requires some care to land and kill the large ones without injury. We are informed, that on such occasions they have been known to entwine themselves round the legs of a fisherman, and to fight with the utmost fury. A Conger, six feet in length, was caught in the Wash at Yarmouth, in April, 1808; but not until after a severe contest with the man who had seized it. The animal is stated to have risen half erect, and to have actually knocked the fisherman down before he could secure it. This Conger weighed only about sixty pounds; but some of the largest exceed even a hundred weight.

CONGER EEL.

The voracity of these fish is enormously great. They often lie concealed, in the mud or sand, at the mouths of large rivers, for the purpose of seizing upon any prey which passes either in or out. If

this happen to be so large as not otherwise to be immediately overcome, we are told that the Conger will coil its body round, and thus prevent its escape; whilst in the mean time, it kills it by means of its teeth. It devours great quantities of the different species of Cuttle-fish, and other soft marine animals, which have not sufficient agility or address to escape from its pursuit.

WOLF-FISH.

Until the Congers are grown to a size so large that they are able stoutly to defend themselves, they are liable to attack from numerous foes. The Wolf-fish, all the larger species of Rays, and even the sea Craw-fish, and Lobsters, destroy them in vast numbers.

During the winter months, it is said that these fish conceal themselves deep in the mud; and that, so long as the cold weather lasts, they seldom come forth from their retreats.

OF THE GYMNOTUS TRIBE IN GENERAL.

Some of the species of Gymnotus inhabit the fresh waters, and others live in the ocean. They are all, except three, confined to America.

THE ELECTRICAL GYMNOTUS, OR EEL.

These fishes possess the singular property of giving a shock, (similar in its effects to that produced from a charged jar,) to any body, or any number of bodies connected together.

GYMNOTUS.

On touching an Electrical Eel with one hand, a sensation is experienced similar to that arising from touching the conductor of an electrical machine: with a short iron rod the same was felt, but less powerfully. While another person provoked the fish, Dr. Williamson put his hand into the water at the distance of three feet from it, and felt an unpleasant sensation in the joints of his fingers. Some small fish were thrown into the water, and the animal immediately stunned and swallowed them. A larger fish was thrown in, which he stunned likewise and attempted to swallow; but, from its size, he could not do so. Dr. Williamson put his hand into the water, and had another

fish thrown in at some distance. The Eel swam up to it, and at first turned away without offering it any violence: after a little time he returned, and, looking steadfastly at it for a few seconds, gave it a shock, by which it instantly turned upon its back, and became motionless. Dr. Williamson at that very instant felt the same sensation in his fingers, as he had done when he put his hand into the water before. A fish was afterwards struck, but not quite killed. When the Electrical Eel perceived this, he returned, and at a second shock, evidently more severe than the former, rendered it motionless. On touching the Eel with one hand so as to provoke it, and holding the other in the water at a little distance, a severe shock was felt through both the arms and across the breast, similar to that from a charged jar. Eight or ten persons, with their hands joined, experienced the same, on the first touching the head, and the last the tail of the fish. A dog being made a link in this chain, uttered a loud yell at the instant of contact. When the Eel was touched with silk, glass, or any other non-conductor, no shock was felt. From a long series of experiments, it appeared to Dr. Williamson that these properties partook so nearly of the nature of electricity, that whatever would convey the electrical fluid, would also convey the fluid discharged by the Eel; and *vice versa*. He, however, was not able to observe that any spark was produced on contact. This mode of defence the fish never adopted except it was irritated; and Dr. Williamson has passed his hand along the back and sides from head to tail, and has even lifted part of its body out of the water, without exciting it to injure him.

Mr. Bryant mentions an instance of the shock from one of these fish being felt through a considerable thickness of wood. One morning, while he was standing by, as a servant was emptying a tub, in which an Electrical Eel was contained, he had lifted it entirely from the ground, and was pouring off the water to renew it, when he received a shock so violent as occasioned him to let the tub fall. Mr. B. then called another person to his assistance, and caused them together to lift up the tub, each laying hold only on the outside. When they were pouring off the remainder of the water, they each received a shock so smart, that they were compelled to desist.

Persons have been knocked down with the stroke. One of these fish having been shaken from a net upon the grass, an English sailor, notwithstanding all the persuasions that were used to prevent him, would insist on taking it up; but the moment he grasped it, he dropped down in a fit; his eyes were fixed; his face became livid; and it was not without difficulty that his senses were restored. He said, that the instant he touched it, "the cold ran swiftly up his arm into his body, and pierced him to the heart."

This property seems principally of use to the Electrical Eels in securing their food; for being destitute of teeth, they would otherwise be scarcely able to seize it. The force of the shock has been satisfactorily proved to depend entirely on the will, and to be exerted as circumstances require. The prey of these fish are generally so stunned by the shock, as to appear dead; but when these have been taken

into another vessel, they have been always found to recover. When the Electrical Eels are hungry, they are tolerably keen in pursuit of their food; but they are soon satisfied, not being able to devour much at one time. An Electrical Eel, upwards of three feet in length, could not swallow a fish more then three, or at most three inches and a half long.

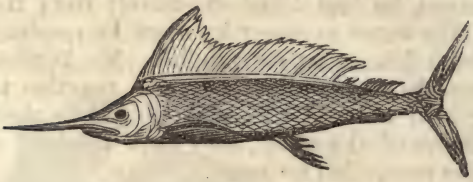
The organs which produce this wonderful accumulation of electric matter, constitute nearly one-half of that part of the flesh in which they are placed, and, perhaps, compose more than one-third of the whole animal. There are two pairs of these organs, one on each side. Their structure is very simple and regular, consisting only of flat partitions, with cross divisions between them. The partitions are thin membranes placed nearly parallel to one another, and of different lengths and breadths.

OF THE SWORD-FISHES IN GENERAL.

THESE are very large and powerful animals, often growing to the length of twenty feet and upwards. Their voracity is unbounded, for they attack and destroy almost every living thing that comes in their way. The larger fish they penetrate with their long, hard, and sword-shaped upper jaw. There are two species, one only of which is found in the European seas.

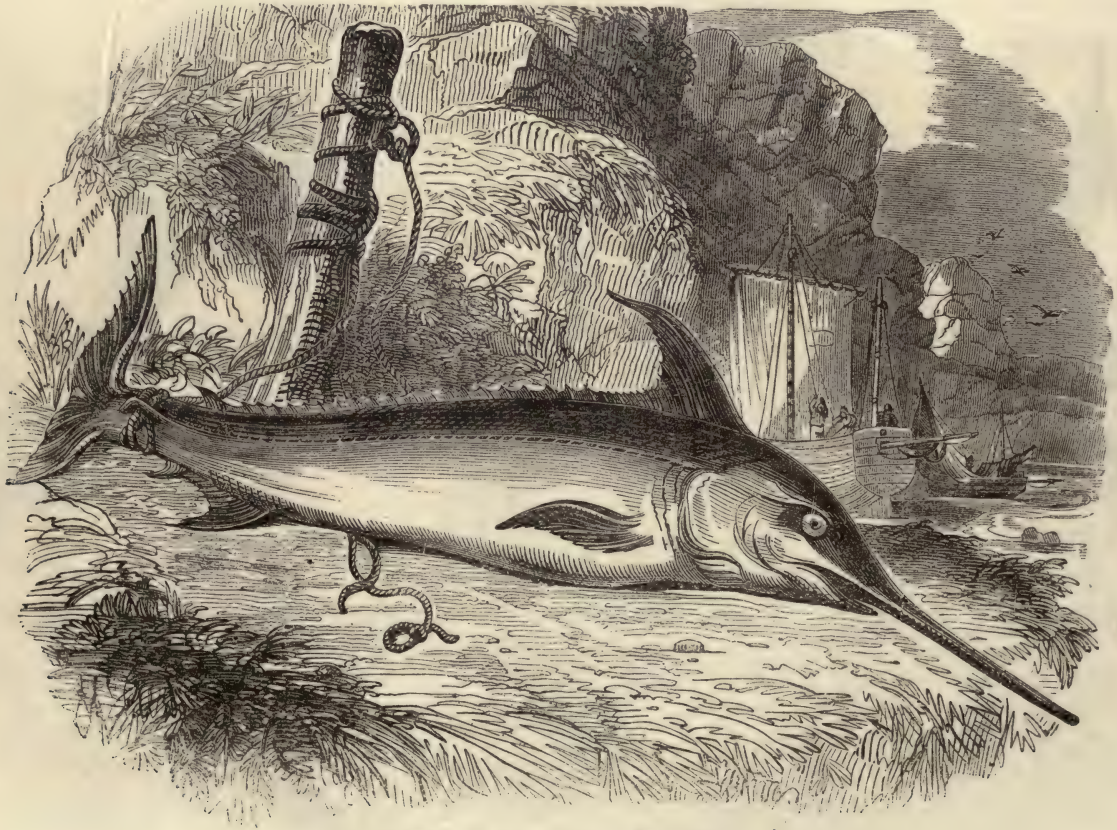
THE BROAD-FINNED, AND THE EUROPEAN SWORD-FISH.

The former of these inhabit the Brazilian and East Indian Seas, and also the Northern Ocean. They frequently grow to the length of twenty feet or upwards, and are very powerful fish.



BROAD-FINNED SWORD-FISH.

When his majesty's ship Leopard, after her return from the coast of Guinea and the West Indies, was ordered, in 1725, to be cleaned and refitted for the Channel service, in stripping off her sheathing the shipwrights found in her bottom, pointing in a direction from the stern towards the head, part of the sword or snout of one of these fishes. On the outside, this was rough, not unlike seal-skin, and the end, where it was broken off, appeared like a coarse kind of ivory. The fish, from the direction in which the sword lay, is supposed to have followed the ship when under sail. The weapon had penetrated through the sheathing, which was an inch thick; and passed through three inches of plank, and beyond that, four inches and a half into the timber. The force requisite to effect this must have been excessively great, especially as no shock was felt by the persons on board. The workmen declared



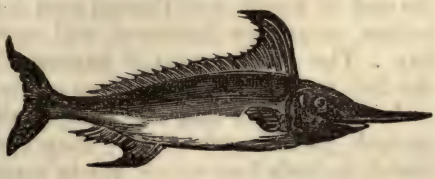
EUROPEAN SWORD-FISH.--Page 864.

that it would be impossible, with a hammer of a quarter of a hundred weight, to drive an iron pin of the same form and size into that wood, and to the same depth, by less than eight or nine strokes, whilst this had been effected by only one.

SWORD OF SWORD-FISH, PIERCING TIMBER.

And about sixteen years ago, a letter was written to Sir Joseph Banks, as president of the Royal Society, from the captain of an East Indiaman, and was accompanied by an account of another instance of the amazing strength which this fish occasionally exerts. The bottom of this ship had been pierced through in such a manner, that the sword was completely imbedded, or driven through its whole length, and the fish killed by the violence of the effort.

The Sword-fishes and the Whale are said never to meet without coming to battle; and the former has the reputation of being always the aggressor. Sometimes two Sword-fishes join against one Whale; in which case the combat is by no means equal. The Whale uses his tail only in his defence: he dives down into the water, head foremost, and makes such a blow with his tail, that, if it take effect, finishes the Sword-fish at a stroke: but the other, which in general is sufficiently adroit to avoid it, immediately falls upon the Whale, and buries his weapon in his sides. When the Whale discovers the Sword-fish darting upon him, he dives to the bottom, but is closely pursued by his antagonist, who compels him again to rise to the surface. The battle then begins afresh, and lasts until the Sword-fish loses sight of the Whale, who is at length compelled to swim off, which his superior agility enables him to do. In the Sword-fish piercing the Whale's body with the tremendous weapon at his snout, he seldom does any great damage to the animal, from not being able to penetrate much beyond the blubber.



EUROPEAN SWORD-FISH.

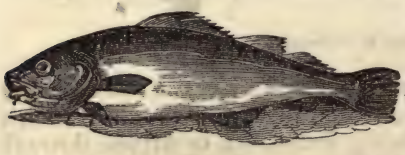
The *European Sword-fish* has sometimes been found on the British coasts; and is very common in the Mediterranean.

JUGULAR FISH.

OF THE COD TRIBE IN GENERAL.

THIS is a numerous tribe, the animals of which inhabit only the depths of the ocean, and seldom visit the fresh waters. They are in general gregarious, and feed on the smaller fish and other marine animals. The flesh of most of them is white, firm, and good eating.

THE COMMON COD.



COMMON COD.

These fish are on y found in the seas of the northern parts of the world; and the great rendezvous for them are the sand-banks of Newfoundland, Nova Scotia, and New England. These shallows are their favorite situations; for here they are able to obtain great quantities of worms, a food that is peculiarly grateful to them. Another cause of their attachment to these places is their vicinity to the polar seas where they return to spawn. There they deposit their roes in full security, and afterwards repair, as soon as the first more southern seas are open, to the banks for subsistence. Few are taken north of Iceland, and the shoals never reach so far south as the Straits of Gibraltar.

The vessels frequenting these fisheries, are from a hundred to two hundred tons burthen, and will catch thirty thousand Cod or upwards each. The hook and the line are the only implements employed in taking the fish; and this in a depth of water from sixteen to sixty fathoms. The great bank of Newfoundland, is represented to be like a vast mountain, above five hundred miles long, and nearly three hundred broad; and the number of British seamen employed upon it, is supposed to be about fifteen thousand.

The best season for fishing, is from the beginning of February, to the end of April; and though each man takes no more than one fish at a time, an expert fisherman will sometimes catch four hundred in a day. The employment is excessively fatiguing, from the weight of the fish, and the great coldness of the climate.

As soon as the Cod are caught, their heads are cut off; they are opened, gutted, and salted: they are then stowed in the hold of the vessel, in beds five or six yards square, head to tail, with a layer of salt to each layer of fish. When they have lain here three or four days to drain off the water, they are shifted into a different part of the vessel, and again salted. Here they remain till the vessel is

loaded. Sometimes they are cut into thick pieces, and packed in barrels, for the greater convenience of carriage.

In the Newfoundland fishery, the *sounds*, or air-bladders, are taken out previously to incipient putrefaction, are washed from their slime and salted for exportation. The tongues are also cured, and brought in barrels containing four or five hundred pounds weight each. From the livers a great quantity of oil is extracted.

Cod feed principally on the smaller species of fish, on worms, shell-fish, and crabs: and their digestion is sufficiently powerful to dissolve the greatest part even of the shells which they swallow.

They are so extremely prolific, that Leuwenhoek counted more than nine millions of eggs in the roe of a middling-sized Cod-fish. The production of so great a number will surely baffle all the efforts of man, or the voracity of the inhabitants of the ocean, to diminish the species so greatly, as to prevent its affording an inexhaustible supply of grateful provision in all ages.

THE HADDOCK.

Haddocks migrate in immense shoals, which usually arrive on the Yorkshire coasts about the middle of winter. These shoals are sometimes known to extend, from the shore, nearly three miles in breadth, and in length from Flamborough Head to Tinmouth Castle, fifty miles, and perhaps even much further. An idea of the number of Haddocks may be formed from the following circumstance: three fishermen, within a mile of the harbor of Scarborough, frequently loaded their boat with these fish twice a day, taking each time about a ton weight of them. The large Haddocks quit the coast as soon as they are out of season, and leave behind them great abundance of small ones. The former are supposed to visit the coasts of Hamburgh and Jutland during the summer.

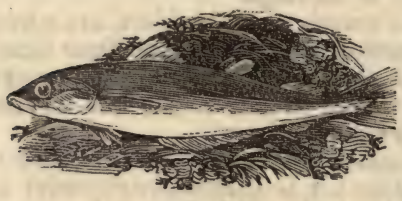
HADDOCK.

THE WHITING.

It is principally near the bottom of the sea, that the Whiting resides. Here it feeds on various species of Crabs and Lobsters, on molluscæ, and young fish. In its stomach there are often found both Sprats and young Herrings. With these the fishermen frequently bait their hooks for the catching of Whitings: they also occasionally bait with marine Worms and Muscles.

Whitings are generally caught off certain parts of the French

coast, in the months of January and February; but, in Holland and England, during the summer season. They sometimes approach the English coasts in such numbers, that their shoals have been known occasionally to extend three or four miles in length, and upwards of a mile in breadth.



WHITING.

They are sometimes caught by means of nets, but lines are generally preferred. Where a fishery is well conducted, these lines are of immense length, and furnished with as many as from a hundred and fifty to two hundred hooks. One vessel will put out twenty of these lines, having in the whole nearly four thousand hooks. Whitings pursue the shoals of Herrings with great eagerness; they are, consequently, often caught in the Herring-nets.

THE LING, AND HAKE.

After the Herring, the Pilchard, and the Cod, the Ling may, in a commercial view, be considered as the most important of all fish. Nine hundred thousand pounds weight of Ling are annually exported from Norway. In England these fish are caught and cured in somewhat the same manner as Cod. Those which are caught off the shores of America, are by no means so much esteemed as those which frequent the coasts of Great Britain and Norway.

THE LING.

They are in season from February till about the end of May. During this time the liver is white, and yields a great quantity of fine and well-flavored oil. A kind of isinglass is made from the air-bladders. The tongues are eaten either fresh, dried, or salted.

Hake are found in the Mediterranean, in the British Channel, and in the North Sea. On some of the shores of Ireland, particularly those of Galway and Waterford, they are very abundant. They are also caught in vast quantities near Penzance in Cornwall, and on some parts of the coast of Devonshire.

There are few animals more voracious than these. They pursue, with great eagerness, the shoals of Herrings and Mackerel; and, when other prey is not easily had, they attack and devour even their own species.

THORACIC FISH.

OF THE SUCKING-FISH TRIBE.

THE Sucking-fishes have a naked, flat, and oily head, surrounded by a narrow margin, and marked with several transverse streaks or grooves. They have also ten rays in their gill-membrane; and their body is destitute of scales.

There are only three known species; these are occasionally seen in the Mediterranean Sea, and the Pacific Ocean.

THE COMMON REMORA, OR SUCKING-FISH.

From the time of Aristotle to the present day, this fish has been an object of constant attention and surprise. The ancient naturalists, not satisfied with imputing to it wonderful qualities, and very extraordinary powers, proceeded so far as even to regard its properties among what they denominated the occult qualities of nature. The Remora, in almost all ages, has ranked high in the writings of poets, in the comparisons of orators, the narrations of travellers, and the descriptions of naturalists.

COMMON REMORA.

The ancients absurdly believed that, small as it is, this fish had the power of arresting the progress of a ship in its fastest sailing, by adhering to its bottom.

It inhabits most parts of the ocean, and is often found so strongly adhering to the sides of Sharks and other fish, by means of the process on the upper part of its head, as not to be separated without great difficulty. Five of these fish have been taken off the body of a single Shark. St. Pierre says, he has put some of them on an even surface of glass, from which he could not afterwards remove them.

The Indians of Jamaica and Cuba formerly used the Sucking-fish in the catching of others, somewhat in the same manner as Hawks are employed by a falconer in seizing birds. They kept them for the purpose, and had them regularly fed. The owner, on a calm morning, would carry one of them out to sea, secured to his canoe, by a slender but strong line, many fathoms in length; and the moment the creature saw a fish in the water, though at a great distance, it would dart away with the swiftness of an arrow, and soon fasten upon it. The Indian,

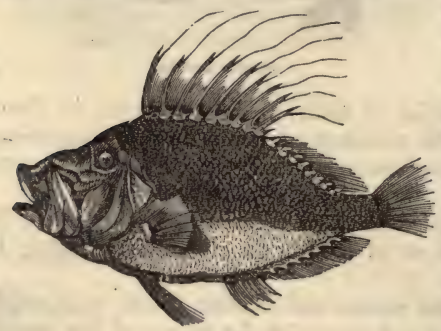
in the mean time, loosened and let go the line, which was furnished with a buoy that floated on the surface of the ocean, and marked the course the Sucking-fish had taken; and he pursued it in his canoe, until he perceived his game to be nearly exhausted. He, then, taking up the buoy, gradually drew the line towards the shore; the Sucking-fish still adhering with so inflexible a tenacity to his prey as not easily to be removed.

OF THE DOREE TRIBE.

NONE of the fishes of the present tribe were known to the ancient naturalists, except the Common Dorée. There are about eight species, some of which are found in the European, and others in the American seas. One of them, which inhabits the fresh waters of India, swims near the surface, like the beaked Chætodon, and catches aquatic insects, by jetting water upon them from its mouth. The wings of the insects are by this means wetted, and they become an easy prey.

THE COMMON, OR JOHN DORÉE.

The ancients were well acquainted with the John Dorée: it is expressly mentioned in the writings both of Ovid and Pliny. This fish, and not the Haddock, is, by many persons, supposed to have been the same out of the mouth of which the apostle Peter, at the command of our Saviour, took the tribute-money. The indication of this is stated to be a dark spot, somewhat like a finger mark, on each side of the head.



JOHN DOREE.

The Dorée is a very voracious animal: it feeds on various species of small fish, which it pursues with great rapidity. It will seize, and almost without discrimination, all kinds of baits. The audaciousness of the Dorée ought not to surprise us, when we consider that, independently of the enormous dimensions of its mouth, and the number and strength of its teeth, it has a longitudinal range of strong spines, not only on each side of the dorsal fins, but likewise from the mouth all the way to the second anal fin. These tend to protect it from injury by its enemies of the deep.

When the Dorée is taken alive out of the water, it is able to compress its internal organs so rapidly, that the air, in rushing through

the openings of the gills, produces a kind of noise somewhat like that which, on similar occasions, is emitted by the Gurnards.

The Dorée is found in the North Sea, in the British Channel, the Mediterranean, and the Atlantic Ocean.

OF THE FLAT-FISH IN GENERAL.

THE present tribe comprehends those fish that are usually denominated Flat-fish; such as the Turbot, Plaise, Flounder, Sole, &c. These are generally confined to the muddy or sandy banks of the sea, where they have the power of burying themselves, as far as the head, for the purpose of escaping the devastations, of the more rapacious tribes. They seldom rise far from the bottom, since, from the want of an air-bladder to buoy them up, which most of the other fishes possess, they are compelled to use their pectoral fins for this purpose, in somewhat the same manner as birds use their wings to rise in the air; and this is not done without considerable exertion. Here, therefore, they generally swim, with their bodies in an oblique position, and feed on such aquatic animals as come in their way.

Many of them as the Holibut, Turbot, and some others, grow to a large size. The eyes of the whole tribe are situated on one side of the head. It is a curious circumstance, that, while the under parts of their body are of a brilliant white, the upper parts are so colored and speckled, as, when they were half immersed, in the sand or mud, to render them almost imperceptible. Of this resemblance they are so conscious, that whenever they find themselves in danger, they sink into the mud, and there continue motionless. This is a circumstance so well known to fishermen, that within their palings on the strand they are often under the necessity, of tracing furrows with a kind of iron sickle in order to direct by the touch, what they are not otherwise able to distinguish. Not being rapacious, nor furnished with any weapons of defence, these fishes owe their security to this stratagem; while the Thornback and Rays, which are carnivorous, and armed with strong spines, although Flat-fish of a different class, are marbled with lighter colors, that they may be perceived and avoided by less powerful fish.

THE TURBOT, AND HOLIBUT.

The northern parts of the English coast, and some places off the coast of Holland, afford Turbots in greater abundance, and in greater excellence, than any other parts of the world. Lying here, however, in deep waters, they are seldom to be caught but by lines.

In fishing for Turbot off the Yorkshire coast, three men go out in each of the boats, each man furnished with three lines, and every line having two hundred and eighty hooks, placed exactly six feet two inches asunder. These are coiled on an oblong piece of wicker-work. with the hooks baited and placed very regularly in the centre of the

coil. When they are used, the nine lines are generally fastened together, so as to form one line, with above two thousand hooks, and extending nearly three miles in length. This is always laid across the current; and an anchor and buoy are fixed at the end of each man's line. The tides run here so rapidly, that the fishermen can only shoot and haul their lines during the still water at the turn of the tide; and therefore, as it is flood and ebb about every alternate six hours, this is the longest time the lines remain on the ground. When the lines are laid, two of the men can usually wrap themselves in the sail and sleep, whilst the third is on watch, to prevent their being run down by ships, and to observe the weather.

TURBOT.

The bait that the Turbots take most readily is a fresh Herring, cut into proper-sized pieces: they are also partial to the smaller Lampreys, pieces of Haddock, Sand-worms, Muscles, and Limpets; and when none of these are to be had, the fishermen use Bullock's liver. The hooks are two inches and a half long in the shank, and nearly an inch wide between the shank and the point. These are fastened to the lines upon sneads of twisted Horse-hair, twenty-seven inches in length. The line is made of small cording, and is always tanned before it is used.

The voracity of Turbot, when in pursuit of prey, is often such, that it carries them into the mouths of rivers, or the entrance of ponds in salt-marshes, which communicate with the sea. But they are not contented with merely employing agility and strength in procuring their food, they likewise have recourse to stratagem. They plunge themselves into the mud or sand at the bottom of the sea, and cover their whole body, except their eyes and mouth. Thus concealed, they seize upon and devour all the smaller kinds of fish which incautiously approach them. It is said that they are very particular in the choice of their food, invariably refusing all except living animals, or such as are not in the least degree putrid. And the fishermen assert, that they are never to be caught with baits which have been bitten by other fish.

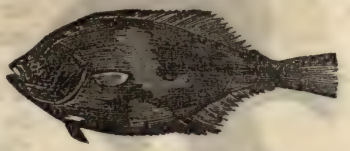
In many parts of England, Turbot and Holibut are sold indiscriminately for each other. They are, however, perfectly distinct; the upper parts of the former being marked with large, unequal, and obtuse tubercles; while those of the latter are quite smooth, and covered with oblong soft scales, that adhere firmly to the body. The eyes of the Turbot also are on the left, whilst those of the Holibut are on the right of the head.

Holibuts are sometimes caught of such immense size, on the northern coasts of England, as to weigh from two to three hundred pounds. Olafsen speaks of having seen one in Iceland, which measured five ells in length.

The Greenlanders employ the membrane of the stomach of the Holibut, in place of glass for their windows.

THE PLAISE AND FLOUNDER.

The general habits both of the Plaise and Flounder, resemble those of all the other flat-fish. These fish are each found in great abundance in most of the European seas. Flounders often ascend rivers, and occasionally even so far as to be beyond the immediate influence of the tides.



FLOUNDER.

OF THE CHÆTODON TRIBE.

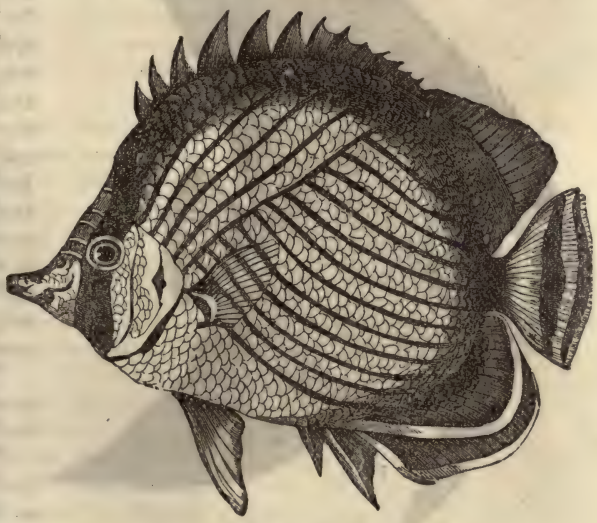
In this tribe, although the species are very numerous, there is only one of which I have met with any account in the least degree interesting.

The head and mouth of the Chætodons are small, and they have the power of pushing out and retracting the lips, so as to make a tubular orifice. The teeth are mostly bristle-shaped, flexible, moveable, closely set, and very numerous. The gill-membrane has from three to six rays. The body is scaly, broad, and compressed; and the dorsal and anal fins are generally terminated with prickles.

THE BEAKED CHÆTODON.

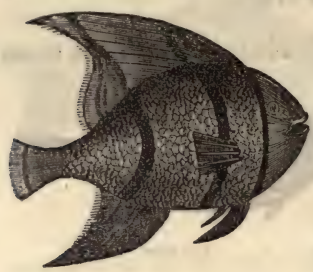
The Beaked Chætodon or Shooting-fish frequents the shores and mouths of rivers in India, and about the Indian islands. It is somewhat more than six inches in length.

This fish feeds principally on flies and other small winged insects that hover about the waters it inhabits; and the mode of taking its prey is very remarkable. When it sees a fly at a distance, on any of the plants in the shallow water, it approaches very



CHÆTODON.

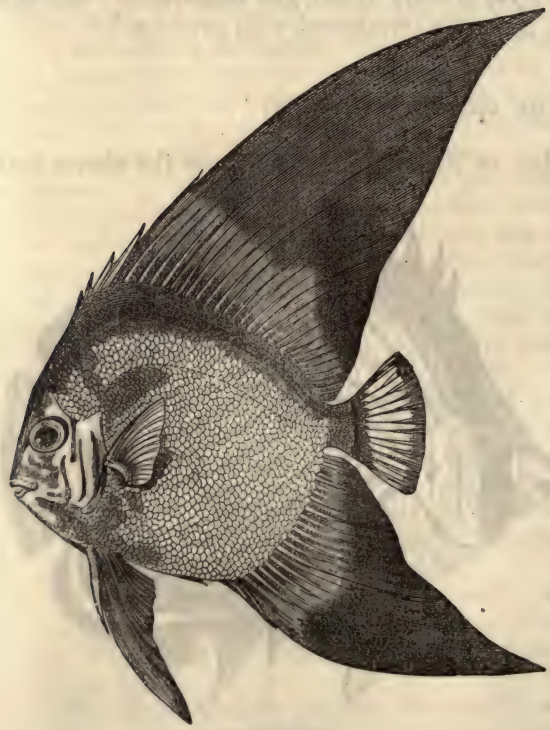
slowly, and with the utmost caution, coming as much as possible perpendicularly under the object. Then putting its body in an oblique direction, with the mouth and eyes near the surface, it remains for a moment immovable. Having fixed its eyes directly on the insect, it shoots at it a drop of water from its tubular snout, but without showing its mouth above the surface, from whence only the drop seems to rise. This is done with so much dexterity, that though at the distance of four, five, or six feet, it seldom fails to bring the fly into the water. With the closest attention the mouth could never be discovered above the surface, although the fish has been seen to eject several drops one after another, without leaving the place, or in the smallest apparent degree moving its body.



CHÆTODON.

This very singular action was reported to M. Hommel, the governor of the hospital at Batavia, near which place the species is sometimes found; and it so far excited his curiosity, that he was determined, if possible, to convince himself of its truth, by ocular demonstration.

For this purpose, he ordered a large, wide tub to be filled with sea-water: he then had some of these fish caught and put into it; and the water was changed every other day. After a while, they seemed reconciled to their confinement; and he tried the experiment. A slender stick, with a fly fastened at the end, was placed in such a manner on the side of the vessel, as to enable the fish to strike it; and it was not without inexpressible delight, that he daily saw them exercising their skill in shooting at it with amazing force and seldom missing their mark.



BAT CHÆTODON

The flesh of this species is white and well tasted.

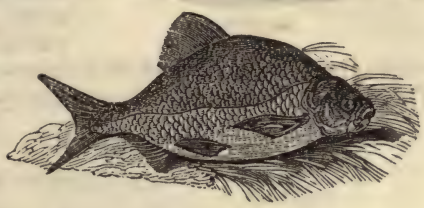
The Bat Chætodon found near Ceylon is a large species with very broad fins.

OF THE PERCH TRIBE.

Of about sixty known species of Perch, the ancients were acquainted only with three. The voracity of these fishes is boundless. They are also endowed with strong muscular powers of action, and with great activity of body. When seized in the hand, or attacked by an enemy, they erect the spines of their first dorsal fin, and strike them at the intruder with such force and address, as sometimes to cause dreadful lacerations.

THE COMMON PERCH.

The Common Perch are gregarious; and, contrary to the nature of nearly all fresh-water fish that swim in shoals, they are so voracious as to attack and devour even their own species. They grow slowly, and are seldom caught of extraordinary size.



COMMON PERCH.

Perch are found in clear, swift rivers, with pebbly or gravelly bottoms, and in those of a sandy or clayey soil. They seem to prefer moderately deep water, and holes by the sides of, or near to gentle streams, where there is an eddy; the hollows under banks, among weeds, and roots of trees; the piles of bridges or ditches, and back streams that have a communication with some river. They also thrive sufficiently well in ponds that are fed by a brook or rivulet. These fish are very tenacious of life. They have been known to survive a journey of near sixty miles, although packed in dry straw.

It is generally believed that a Pike will not attack a full-grown Perch: he is deterred from so doing, by the spiny fins of its back, which this fish always erects at the approach of an enemy. The smaller Perch, however, are frequently used as bait for Pike.

The season of angling for Perch, is from April to January; and the time from sunrise till ten o'clock, and from two o'clock till sunset: except in cloudy weather, with a ruffling south wind, when they will bite all day. The baits are various kinds of worms, a minnow, or grass-hopper. So voracious are these fish, that it is said, if an expert angler find a shoal of them, he may catch every one. If, however, a single fish escape that has felt the hook, all is over; this fish becomes so restless, as soon to occasion the whole shoal to leave the place.

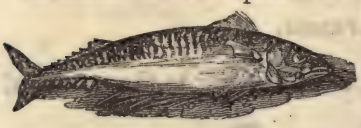
In winter the Perch is exceedingly abstemious, and during that season it scarcely ever takes a bait, except in the middle of a warm sunny day. In clear weather, during the spring, sometimes a dozen or more of these fish may be observed in a deep hole, sheltered by

trees and bushes. The angler may then observe them striving which shall first seize his bait, till the whole shoal are caught.

In one of the pools of Merionethshire there is a singular *variety* of the Perch, the back of which is hunched, and the lower part of the back-bone next the tail is strangely distorted. The common kind are as numerous in this pool as the deformed fish. Some of the crooked Perch have likewise been found in the small alpine lakes of Sweden

OF THE MACKEREL TRIBE.

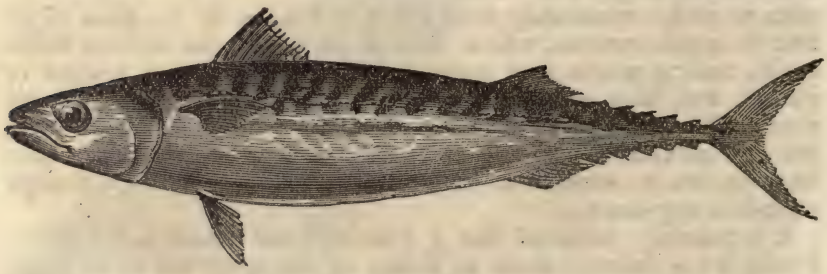
NEARLY all the species of Mackerel are gregarious, and unite in immense shoals. Some of them are migratory, making long voyages at certain seasons of the year. It is believed that they are all eatable: and some of them are well known to be exceedingly delicate food. They afford employment and support to numerous fishermen in various countries. There are in the whole about twenty-five species.



MACKEREL.

THE COMMON MACKEREL.

From the elegance of its shape, and the brilliancy of its colors the



COMMON MACKEREL.

Mackerel, when alive, is one of the most beautiful fish that frequents our coasts. Death, in some measure, impairs the colors, but it by no means obliterates them.

Mackerel visit our shores in vast shoals; but, from being very tender and unfit for long carriage, they are found less useful than other gregarious fish. In some places they are caught by lines from boats; for during a fresh gale of wind they readily seize a bait. The usual bait is a bit of red cloth or a piece of the tail of a Mackerel. It is necessary that the boat should be in motion, in order to drag the bait along near the surface of the water. The great fishery for Mackerel is in some parts of the west coast of England. This is of such an extent as to employ, in the whole, a capital of nearly two hundred thousand

pounds. The fishermen go out to the distance of several leagues from the shore, and stretch their nets, which are sometimes several miles in extent, across the tide, during the night. The meshes of these nets are just large enough to admit the heads of tolerably large fish, and to catch them by the gills. A single boat has been known to bring in, after one night's fishing, a cargo that has been sold for nearly seventy pounds. Besides these, there is, in the west of England, another mode of fishing for Mackerel with a *ground seine*. A coil of

MACKEREL BOATS.

rope, about two hundred fathoms in length, with the net fastened to one end, is tied, at the other, to a post or rock, on the shore. The boat is then rowed to the extremity of this coil, when a pole, fixed there, and leaded heavily at the bottom, is thrown overboard. The rowers, from this place, make as nearly as possible a semicircle, two men continually and regularly putting the net into the water. When they come to the other end of the net, where there is another leaded pole, they throw that overboard. Another coil of rope, similar to the first, is by degrees thrown into the water, as the boatmen make for the shore. The boat's crew now land, and, with the assistance of persons stationed there, haul in each end of the net till they come to

the two poles. The boat is then again pushed off towards the centre of the net, in order to prevent the more vigorous fish from leaping over the corks. By these means, three or four hundred fish are often caught at one haul.

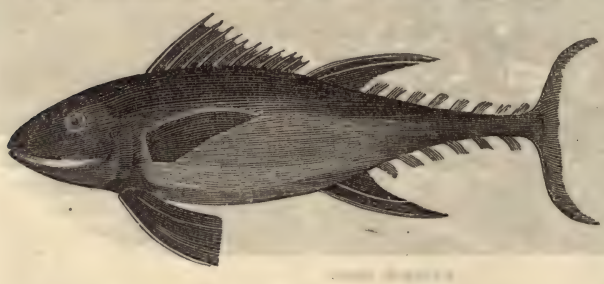
Mackerel are said to be fond of human flesh. Pontoppidan informs us, that a sailor, belonging to a ship lying in one of the harbors on the coast of Norway, went into the water to wash himself; when he was suddenly missed by his companions. In the course of a few minutes, however, he was seen on the surface, with vast numbers of these fish fastened on him. The people went in a boat to his assistance; and though, when they got him up, they forced with some difficulty the fishes from him, they found it was too late; for the poor fellow, very shortly afterwards, expired.

Their greatest weight seldom exceeds two pounds, though some have been seen that weighed more than five. Their voracity has scarcely any bounds; and when they get among a shoal of Herrings, they make such havoc as frequently to drive it away. They are very prolific, and deposit their spawn among the rocks near the shore, about the month of June. They die almost immediately after they are taken out of the water, and for a short time exhibit a phosphoric light.

In spring their eyes are covered with a white film, that grows in the winter, and is regularly cast at the beginning of summer. During this time they are said to be nearly blind.

THE THUNNY.

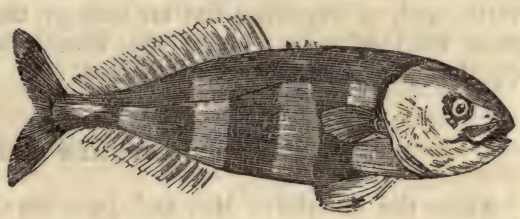
On the coast of Sicily, as well as in several other parts of the Mediterranean, there are very considerable Thunny fisheries. The nets are spread over a large space of sea, by means of cables fastened to anchors, and they are divided into several compartments. A man, placed upon the summit of a rock high above the water, gives the signal of the fish being arrived; for he can discern from that elevation what passes under the water, much better than any person near the surface. As soon as notice is given that a shoal of fish has penetrated as far as the inner compartment of the net, the passage is drawn close, and the slaughter begins.



THUNNY.

Thunnies enter the Mediterranean about the vernal equinox, travelling in a triangular phalanx so as to cut the waters with its point, and to present an extensive base for the tides and currents to act against, and impel forwards.

They repair to the warm seas of Greece to spawn, steering their course thither along the European shores; but as they return they approach the African coast: the young fry is placed in the van of the squadron as they travel. They come back from the east in May, and, about that time, they abound on the coasts of Sicily and Calabria. In autumn they steer northward, and frequent the neighborhood of Amalphi and Naples. They are not uncommon on the western coasts of Scotland, where they come in pursuit of the Herrings, and often, during the night, strike into the nets, and do considerable damage. When the fishermen draw these up in the morning, the Thunny rises at the same time towards the surface, ready to catch the fish that drop out. On the Thunny being observed, a line is thrown into the water, having a strong hook baited with a Herring, which it seldom fails to seize. As soon as the fish finds itself ensnared, it seems to lose all its active powers, and after very little resistance, submits to its fate.



THUNNY.

The quantity of these fish that is annually consumed in the two Sicilies, almost exceeds the bounds of calculation. When caught in May they are full of spawn, and are then esteemed unwholesome, as being apt to occasion headaches and vapors; to prevent these bad effects, the natives fry them in oil, and afterwards salt them. The pieces when fresh, appear exactly like raw beef; but when boiled they turn pale, and have somewhat the flavor of Salmon. The most delicate parts are those about the muzzle. Those fish which the inhabitants are not able to use immediately, are cut into slices, salted, and preserved in large tubs, either for sale or winter provisions.

The Thunny was a fish so well known to the ancients, as to form a principal article of their commerce. By the Romans it was held in great estimation.

OF THE SURMULLETS IN GENERAL.

By the ancient Greeks and Romams, Surmullets were held in the highest esteem for the table. Pliny was acquainted with two species; and the principal distinction of habit that he has mentioned is, that one of them subsists on living animals, and the other on marine plants. This distinction, however, is by no means correct, since not only the mouth, but also the digestive organs, are precisely the same in each; consequently their food is necessarily the same also.

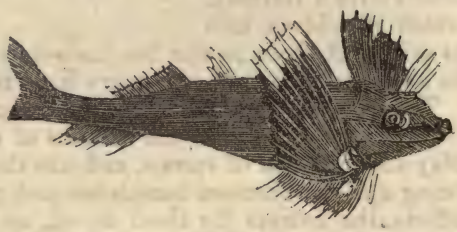
There are several species. They feed on other fish, on testaceous animals, Crabs and putrid bodies which they find floating in the ocean. None of them are known to inhabit fresh waters.

OF THE GURNARDS IN GENERAL.

These are carnivorous and predatory fish. They inhabit not only the North Sea and the Baltic, but are also found in the Mediterranean, and in various parts of the ocean. When taken alive out of the water, they erect their sharp dorsal fin, and attempt to inflict a wound by means of their spines. These are their weapons of defence against their enemies of the ocean. When taken up they compress their bodies, and, in expelling the air through their gills they make a singular kind of noise: hence the French have given to them the appellation of *Grondins,* or grumblers.

THE GRAY GURNARD, AND RED GURNARD.

About the months of May and June the Gray Gurnards approach the sea-shores in considerable shoals, for the purpose of depositing their spawn upon the shallows. They are occasionally found on most of the shores of Great Britain and Ireland.



GURNARD

They chiefly reside in the depths of the ocean, where they have a plentiful supply of food, in Crabs, Lobsters, and Shell-fish, on which it is supposed they, for the most part feed.

Whilst it is in the water, the colors of the *Red Gurnard* are, almost beyond conception, brilliant and beautiful, particularly in the broad glare of sunshine, as they then vary, in the most pleasing manner, with every motion of the fish.

There are few of the residents of the ocean so voracious as this; for it devours, with eagerness, almost every thing eatable that comes in its way.

ABDOMINAL FISH.

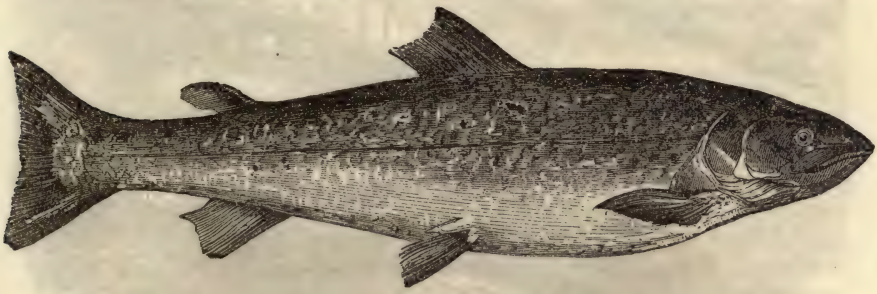
OF THE SALMON TRIBE.

THESE fish are distinguished from all others, by having two dorsal fins, of which the hindermost is fleshy and without rays. They have teeth both in the jaws and on the tongue; and the body is covered with round and minutely striated scales.

Rapid and stony rivers, where the water is free from mud, are the favorite places of most of the Salmon tribe. Some of them do indeed inhabit the sea; but they come up the rivers for the purpose of depositing their spawn in the beds of gravel; and in this instinctive pursuit they are able to surmount wonderful obstacles that oppose their course. After spawning, they return to the sea lean and emaciated. The whole tribe is supposed to afford wholesome food for mankind.

THE COMMON SALMON.

This fish seems, in a great measure, confined to the northern seas, being unknown in the Mediterranean, and in the waters of other warm



SALMON.

climates. It lives in fresh as well as in salt waters, forcing itself in autumn up the rivers, sometimes for hundreds of miles, for the purpose of depositing its spawn. In these peregrinations it is that Salmon are caught in the great numbers that supply our markets and tables. Intent only on the object of their journey, they spring up cataracts, and over other obstacles of very great height. This extraordinary power seems to be owing to a sudden jerk which the fish gives to its body, from a bent into a straight position.

Where the water is low, or where sand-banks intervene, they throw themselves on one side, and in that position soon work themselves over into the deep water beyond.

When the Salmon have arrived at a proper place for spawning in, the male and female unite in forming, in the sand or gravel, a proper receptacle for their ova, about eighteen inches deep: this they are also supposed afterwards to cover up. In this hole the ova lie until the ensuing spring, (if not displaced by the floods,) before they are hatched. The parents, however, immediately after their spawning, and extremely emaciated, hasten to the salt water.

COLERAINE SALMON LEAP ON THE BAN.—ANGLING FOR SALMON.

When Salmon enter the fresh waters, they are always more or less infested with a kind of insect called the Salmon-louse; and when these are numerous, the fish are esteemed in high season. Soon after the Salmon have left the sea, the insects die and drop off.

Salmon become lean after the spawning-time, but they soon acquire their proper bulk when they return to the sea. Their food consists of the smaller fishes, insects, and worms; for all these are used with success as baits, by the anglers for Salmon.

The Scotch fisheries are very productive; as are also several of those in Ireland, particularly that at Cranna, on the river Ban, about a mile and a half from Coleraine. At this place, as many as three hundred and twenty tons of Salmon were taken in one year.

Salmon are cured by being split, rubbed with salt, and put in pickle, in tubs provided for the purpose, where they are kept about six weeks: they are then taken out, pressed, and packed in casks with layers of salt.

Different species of Salmon come in such abundance up the rivers of Kamtschatka, as to force the waters before them, and even to dam up the stream so as sometimes to make them overflow their banks. In this case, when the water finds a passage, such multitudes are left on the dry ground, as (if it were not for the violent winds which are prevalent in that country, assisted by the bears and dogs) would soon produce a stench sufficiently great to cause a pestilence.

Salmon are said to have an aversion to any thing red: hence the fishermen are generally careful not to wear jackets or caps of that color. Pontoppidan says also, that they have so great a dislike to carrion, that, if any happen to be thrown into the places where they are, they immediately forsake them.

THE SALMON, OR SEA TROUT.

Like the Salmon, this fish is an inhabitant of the sea, but in the months of November and December it enters the rivers, in order to deposit its ova; and, consequently, during the spawning season it is occasionally found in lakes and streams, at a great distance from the sea.

SALMON, OR SEA TROUT.

It feeds on aquatic insects, worms, and small fish, and is often caught by anglers, either with real or artificial flies.

The flesh of this Trout is red and of excellent flavor, but, like that of the Salmon, the goodness varies according to the quality of the water in which they are caught. On this also depends the greater or less brilliancy and beauty of their color. In muddy or putrid waters, they generally become insipid and unpalatable. These fish chiefly delight in large rivers, where the stream is rapid, and the bottom is either of sand or gravel.

THE COMMON, OR RIVER TROUT.

Though this is a delicate and excellent fish for the table, it was in no esteem among the ancients. It abounded in most of the lakes of the Roman empire, yet is only mentioned by writers on account of its beautiful colors.

In some rivers, Trouts begin to spawn in October; but November

is the chief month of spawning. About the end of September they quit the deep water, to which they had retired during the hot weather, and make great efforts to gain the course of the currents, and seek out a proper place for depositing their ova. This is always done on a gravelly bottom, or where gravel and sand are mixed among stones, near the end or sides of streams. At this period they turn black about the head and body, and become soft and unwholesome. They are never good when they are full of roe: which is contrary to the nature of most other fish. After having spawned they become feeble, their bodies are wasted, and those beautiful spots, which before adorned them, are imperceptible. Their heads appear swelled, and their eyes are dull. In this state they seek still waters, and continue there sick, as it is supposed, all the winter. There are in all Trout-rivers some barren female fish, which continue good through the winter.

COMMON TROUT.

In March, or sometimes earlier, if the weather be mild, the Trouts begin to leave their winter quarters, and approach the shallows or tails of streams, where they cleanse and restore themselves. As they acquire strength they advance still higher up the rivers, till they fix on their summer residence, for which they generally choose an eddy behind a stone, a log, or bank, that projects into the water, and against which the current drives. They also frequently get into holes under roots of trees, or into deeps that are shaded by boughs and bushes.

These fish are said to be in season from March to September.

THE SMELT.

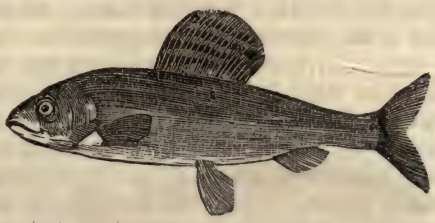
It is generally considered that the smell of this elegant little fish somewhat resembles that of cucumbers newly cut. From its very peculiar scent, so unlike that of any other species of fish, we give to it the denomination of Smelt, or "smell it." The Germans call it *Stinckfisch.*

THE SMELT

The best season for these fish, is from December to May, when they approach the shores, and even ascend the rivers in immense shoals. Their usual season of spawning is about the months of March and April. In certain rivers, Smelts appear a long time before they spawn, and in others it has been remarked that they do not at all appear, so long as there is any snow-water floating down. After they have deposited their ova, they return to the sea, and they are not again found in the rivers until the ensuing season. In the Thames they are caught in great numbers from November to January.

THE UMBER, OR GRAYLING.

The ancient writers strongly recommend these fish as food for sick persons: they considered them to be peculiarly wholesome, and easy of digestion. To oil made from the fat of the Graylings, they attributed the property of obliterating the marks of small-pox, freckles, and other spots on the skin. The season of the year during which these fish are considered in greatest perfection, is from September to January.



GRAYLING.

Graylings delight chiefly in rapid streams, where they afford great amusement to the angler. They are very voracious, and rise eagerly to the Fly. They are bolder fish than Trout, and even if missed several times successively they will still pursue. So rapid are their motions in the water, that their name of Umber has been thence derived. Ausonius says of them,

"The Umber swift, escapes the quickest eye."

They feed principally on worms, insects, and water-snails; and the shells of the latter are often found in great quantity in their stomachs.

OF THE PIKE TRIBE.

It does not appear that more than three species of Pike were known to the ancients. The species at present known, are fifteen in number. They are all predatory fish, but few of them are so voracious as the Common Pike. They multiply fast, and increase rapidly in size. Their velocity in the water is very great, and their general muscular powers are beyond those of most other fish.

THE COMMON PIKE.

There is scarcely any fish of its size in the world, that in voracity can equal the Pike. One of these fish has been known to choke itself in attempting to swallow another of its own species, that proved too large a morsel: and it has been well authenticated, that in Lord Gower's canal at Trent-

COMMON PIKE.

ham, a Pike seized the head of a Swan as she was feeding under water, and gorged so much of it, as to kill them both.

A Pike was presented to Lord Cholmondeley, that was an ell long, and weighed thirty-five pounds. His Lordship directed it to be put into a canal in his garden, which at that time contained a great quantity of fish. Twelve months afterwards the water was drawn off, and it was discovered that the Pike had devoured all the fish except a large Carp, that weighed between nine and ten pounds; and even this had been bitten in several places. The Pike was again put in, and an entire fresh stock of fish for him to feed on: all these he devoured in less than a year. Several times he was observed by workmen who were standing near, to draw Ducks and other water-fowl under water. Crows were shot and thrown in, which he took in the presence of the men. From this time the slaughtermen had orders to feed him with the garbage of the slaughter-house; but, being afterwards neglected, he died, as it is supposed, from want of food.

Gesner relates, that a famished Pike, in the Rhone, seized the lips of a Mule, and was, in consequence, dragged out of the water; and that people, while washing their legs, had often been bitten by these voracious creatures.

The smaller fish exhibit the same fear of this tyrant, as many of the feathered tribe do of the rapacious birds; while lying dormant near the surface, they sometimes swim round him in vast numbers, and with great anxiety.

If the accounts of different writers on the subject are to be credited the longevity of the Pike is very remarkable. Gesner mentions a Pike, whose age was ascertained to be two hundred and sixty-seven years.

OF THE MULLET TRIBE.

The lips of these fish are membranaceous, and the lower lip is carinate inwards. They have no teeth in the jaws, but on the tongue and palate only. Above the angle of the mouth there is a hard callus. The gill-membrane has seven incurvated rays. The gill-covers are smooth and rounded.

THE WHITE, OR COMMON MULLET.

There are few parts of the globe which border upon the sea, where the White Mullet are not found. It is one of those species of fish, which, at certain seasons of the year, pass from the sea into the rivers. These they usually enter in the months of May, June, and July Fresh water is so little injurious to the Mullet, even for permanent residence, that it is said they may even be kept through the whole year, in lakes which have sandy bottoms.

They usually appear in immense shoals, and swim very near the surface of the water. When the fishermen observe an unusual

rippling in the water, and also perceive the water at a distance to have a peculiarly blue appearance, they know that a shoal of Mullet is there. The general mode in which these fish are caught, is by seine nets. In some parts of the continent, the fisherman endeavor, by making violent noises, to drive the fish into their nets; but they are so cunning, that, when surrounded by the net, the whole shoal will

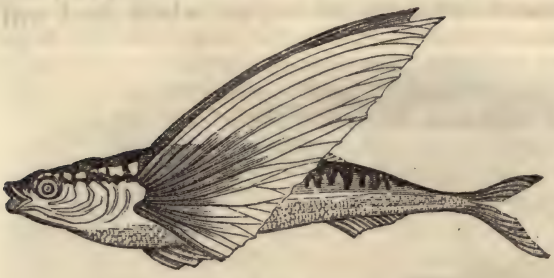
FISHERMEN OFF ST. ABB'S HEAD.

sometimes escape; for, if one of them spring over it, the rest, like Sheep, are sure to follow their leader.

Mullet are in considerable esteem for the table; and are in best season about the month of August. They are usually eaten boiled; and, on the continent, the most common sauce for them is oil and lemon-juice.

OF THE FLYING-FISH IN GENERAL.

THE head is covered with scales, and the mouth is destitute of teeth. The belly is angular, and the pectoral fins are almost as long as the body.



FLYING-FISH.

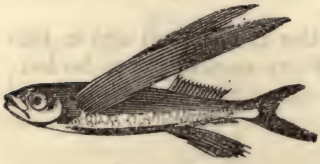
These fish chiefly inhabit the seas of hot climates; but they are occasionally found within the temperate regions. There are only three known species.

THE COMMON FLYING-FISH.

The wings, as they are usually denominated, with which these fish have the power of raising themselves into the air, are nothing more than large pectoral fins, composed of seven or eight ribs or rays, connected by a flexible, transparent, and glutinous membrane. They have their origin near the gills, and are capable of considerable motion backward and forward. These fins are used also to aid the progress of the fish in the water.

COMMON FLYING-FISH.

The Flying-fish has numerous enemies in its own element; the Dorado, the Thunny, and many others, pursue and devour it. To aid its escape, it is furnished with its long pectoral fins; and by means of these it is able to raise itself into the air, where it is often seized by the Albatross or tropic birds. Its flight is short, seldom more than sixty or seventy yards at a time, but, by touching the surface at intervals to moisten its fins, it is able to double or treble this distance. The whole flight, however, is of so short a duration, that even in the hottest weather, its fins do not become dry. By touching the water it not only wets its fins, but seems to take fresh force and vigor, for another spring into an element, where it is not long able to support its weight by the motion of its fins. If the Flying-fishes were solitary animals they would not be worth the pursuit of some of their larger enemies: they are seldom seen to rise singly from the water, but generally appear in large shoals.



FLYING-FISH.

It has been inconsiderately remarked, that all "animated nature seems

combined against this little fish, which possesses the double powers of swimming and flying, only to subject it to greater dangers. If it escape its enemies of the deep, this is only that it may be devoured by the sea fowl, which are waiting its appearance in the air." Its destiny, however, is not peculiarly severe: we should consider that, as a fish, it often escapes the attack of birds; and, in its winged character, the individuals frequently throw themselves out of the power of fishes.

The eyes of these fish are so prominent, as to admit of their seeing danger from whatever quarter it may come; but, on emergency, they

FLYING-FISH PURSUED BY ALBATROSS AND FISH.

are able, in addition, to push them somewhat beyond the sockets, so as considerably to enlarge their usual sphere of vision.

They are frequently either unable to direct their flight out of a straight line, or else they become exhausted on a sudden: for sometimes whole shoals of them fall on board the ships that navigate the seas of warm climates.

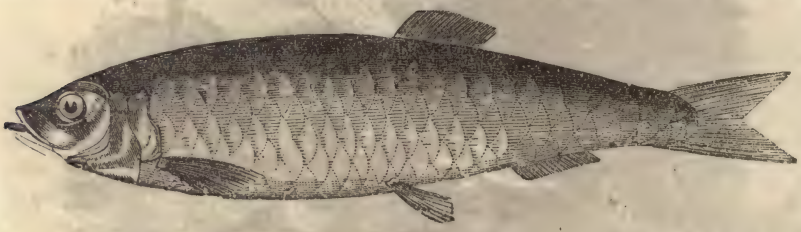
In the water, they have somewhat the manner of the Swallow in the air, except that they always swim in straight lines; and the blackness of their backs, the whiteness of their bellies, and their forked and expanded tails, give them much the same appearance as that of these birds.

OF THE HERRING TRIBE.

THESE fish inhabit the depths of the ocean. They feed on molluscæ, and various kinds of small crustaceous animals, and shell-fish. Three of the species, the Common Herring, the Shad, and the Anchovy, were known to the ancients, and, as articles of food, were held by them in considerable esteem. It is not known that any of these fish are natives of fresh waters. Most of the species are migratory, and generally in immense shoals: and most, if not all of them, are excellent food.

THE COMMON HERRING.

Herrings are found in the greatest abundance in the high northern latitudes. In those inaccessible seas that are covered with ice for a



THE HERRING.

great part of the year, they find a quiet and sure retreat from all their numerous enemies. The quantity of food which those seas supply is immensely great.

Thus remotely situated, and defended by the icy rigor of the climate, they live at ease, and multiply beyond expression, issuing thence in such shoals, that, were all the men in the world to be loaded with Herrings, they could not carry off the thousandth part of them. Their enemies, however, are extremely numerous. All the monsters of the deep find them an easy prey; and, in addition to these, the immense flocks of sea-fowl that inhabit the polar regions, watch their outset, and spread devastation on all sides.

In their outset, this immense swarm of living creatures is divided into distinct columns, each five or six miles in length, and three or four in breadth, and in their progress they even make the water ripple before them.

In the month of June they are found about the Shetland islands, whence they proceed to the Orkneys, and, then dividing, they surround the islands of great Britain and Ireland, and unite again, off the Land's End, in the British Channel, in September. From this part of the ocean the great united body steers south-west, and is not found any more on that side, or in the Atlantic, until the same time the ensuing year, but next appear off the American coasts. They arrive in

Georgia and Carolina about the end of January, and off the coast of Virginia in February. Hence they coast eastward to New England. They then divide, and go into all the bays, rivers, creeks, and even small streams of water, in amazing numbers, and continue spawning in the fresh water until the end of April, when the old fish return into the sea, where they change their latitudes by a northward direction, and arrive at Newfoundland in May. After this they are no more seen in America till the following spring. Their passing sooner or later up the American rivers, depends on the warmth of the season; and even

YARMOUTH JETTEE.—HERRING BOATS RETURNED.

if a few warm days invite them up, and cool weather succeed, their passage is immediately checked till the heat becomes more powerful.

The fecundity of the Herring is astonishing. It has been calculated, that if the offspring of a single Herring could be suffered to multiply unmolested and undiminished for twenty years, they would exhibit a bulk ten times the size of the earth. But happily, Providence has so contrived the balance of nature, by giving them innumerable enemies, as always to keep them within proper bounds.

They once swarmed so excessively on the west side of the Isle of

Skye, that the numbers caught were more than could possibly be carried away. After the boats were all loaded, and the country round was served, the neighboring farmers made them up into composts, and manured their ground with them in the ensuing season. This shoal continued to frequent the coast for many years, but not always in numbers equal to these.

Herrings die almost the moment after they are taken out of the water; whence originated the adage, in common use, *as dead as a Herring.* They also soon become tainted after they are killed. In summer, they are sensibly worse for being out of the water only a few

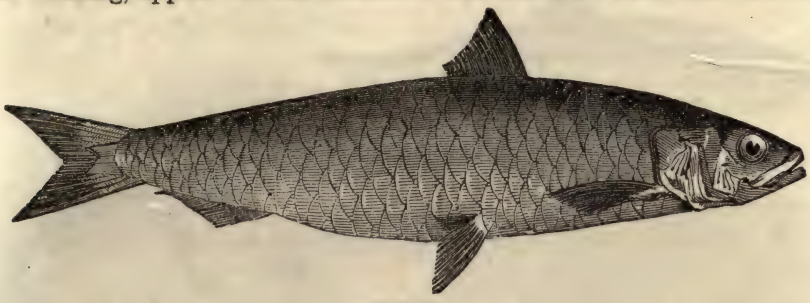
YARMOUTH BEACH CART, FOR CARRYING HERRING TO MARKET

hours; and, if exposed but a few minutes to the rays of the sun, they are perfectly useless, and will not take the salt.

After the nets are hauled, the fish are thrown upon the deck of the vessel, and each of the crew has a certain task assigned to him. One part is employed in opening and gutting them; another in salting, and a third in packing them in the barrels in layers of salt. The red Herrings lie twenty-four hours in the brine; they are then taken out, strung by the head on little wooden spits, and hung in a chimney formed to receive them; after which a fire of brushwood, which yields much smoke, but no flame, is kindled under them, and they remain there till they are sufficiently smoked and dried, when they are put into barrels for carriage.

THE PILCHARD.

About the middle of July, the Pilchards, which are a smaller species of Herring, appear in vast shoals off the coasts of Cornwall. These



PILCHARD

shoals remain till the latter end of October, when it is probable they retire to some undisturbed deep, at a little distance, for the winter. It has been supposed, but improperly, that, like the Herring, they migrate into the arctic regions. If Pilchards performed any migration northward, we should have heard of their being occasionally seen and caught on their passage; but of this we have no authenticated instance. The utmost range of the Pilchards seems to be the Isle of Wight in the British, and Ilfracomb in the Bristol Channel. Forty years back, Christmas was the time of their departure: this alteration in time is a very singular fact.

We have the following account of the Pilchard-fishery from Dr. Borlase:—"It employs (he says) a great number of men on the sea, training them thereby to naval affairs; employs men, women, and children, at land, in salting, pressing, washing, and cleaning; in making boats, nets, ropes, and casks. The poor are fed with the refuse of the captures, the land with the offals of the fish and salt; the merchant finds the gains of commission and honest commerce, the fishermen the gains of the fish. Ships are often freighted hither with salt, and into foreign countries with the fish, carrying off, at the same time, part of our tin. From a statement, the number of hogsheads exported from Great Britain, each year, for ten years, amounted to twenty-nine thousand seven hundred and ninety-five hogsheads yearly. Every hogshead, for ten years last past, together with the bounty allowed for exportation, and the oil made out of it, has amounted, one year with another, at an average, to the price of one pound thirteen shillings and three-pence; so that the cash paid for Pilchards exported has, at a medium, annually amounted to the sum of forty-nine thousand five hundred and thirty-two pounds and ten shillings."

When Dr. Maton made his tour of the western counties, he and a friend hired a boat to go out and see the Pilchard-fishing at Fowy. He says, that the fishing-boats, which are numerous, are usually

stationed in ten fathoms water, and clear of all breakers. Light sail-boats keep out at a little distance before them, to give notice to the fishermen of the approach of a shoal. Persons are also frequently stationed on the neighboring rocks, to watch the course of the fish: these are called *huers*, from their setting up a *hue* to the fishermen.

The nets, which are seines, are sometimes two hundred fathoms or

PILCHARD BOATS OFF SCARBOROUGH.

more in circumference, and about eighteen fathoms deep. Some of them are said to be capable of holding upwards of two hundred hogsheads of fish, each containing about three thousand. About thirty thousand hogsheads are here considered a tolerably good produce for one season. But it happens, now and then, that the fishery almost entirely fails.

The Dog-fish are great enemies to the Pilchards, often devouring them in amazing numbers.

THE SPRAT.

Sprats are caught on the coasts of the Mediterranean, in such immense shoals, that at a single haul of a large net, as many have sometimes been landed as would have filled between forty and fifty barrels. From the circumstance of these fish being caught near the island of Sardinia in great abundance, and being exported from that island, in barrels, to various parts of the

SPRAT.

SPRAT BOAT FISHING OFF PURFLEET ON THE THAMES

world, they have obtained, in several countries, the name of *Sardine*. Sprats are likewise found in the North Sea and the Baltic.

They usually frequent the deep parts of the sea; but in the autumn they approach the smooth and sandy shores, for the purpose of depositing there their spawn.

THE SHAD.

Shads appear in the river Rhine in the month of March; in the Severn and Thames, and Delaware, in April, May, and June; and in the Nile in December and January. As soon as they arrive, they deposit their spawn in places where the current is most rapid; and, some months afterwards, return to the sea.

SHAD.

They ascend the Rhine as far as Basil, where they are caught in nets, and osier baskets or traps. In order to attract them into the latter, the fishermen use a bait of peas, prepared in a certain way with myrrh: this bait is put into a small bag, and suspended in the inside. When caught by means of lines, an earthworm is used for a bait.

It has been asserted that Shads delight in music, and that they are afraid of storms. They are so little tenacious of life, that, like the Herring, they always die as soon as they are taken out of the water.

When these fish are taken out of the sea, they are thin and ill-flavored; but the longer they continue in the rivers, the fatter and more eatable they become. In the Severn they are considered very delicate fish, especially in that part of the river which flows by Gloucester; here they are usually sold at a price higher than that of Salmon. The Thames Shad is esteemed a very coarse and insipid fish. In most countries the males are considered less delicate food than the females.

THE ANCHOVY.

Like the Herring and the Sprats, these fish leave the deeps of the open sea inorder to frequent the smooth and shallow places of the coasts, for the purpose of spawning. Between the months of December and March, immense numbers are caught on the shores of Provence, Brabant, and Catalonia: during June and July, in the English Channel, and in the environs of Venice, Genoa, Rome, and Bayonne.

The fishermen generally light a fire on the shore, for the purpose of attracting the Anchovies, when they fish for them in the night. After the Anchovies are cleansed and their heads are cut off, they are cured in a certain way, and packed in small barrels for sale and exportation. The ancient Greeks and Romans prepared from these fish a liquid, which they denominated *garum*, and which was highly esteemed by most of the epicures of that day.

Anchovies are occasionally found both in the North Sea and in the Baltic; but it is supposed that they are in much greater number in the Mediterranean, than in any other part of the world.

OF THE CARP TRIBE.

THE Carp tribe, for the most part, inhabit fresh waters, where they feed on worms, insects, aquatic plants, fish, and clay or mould. Some of them are migratory. Most of the species, which are very numerous, are found only in the northern countries of Europe; and, consequently, were unknown to the ancient naturalists of Greece and Rome.

THE COMMON CARP.

In their general habits, these fish exhibit so great a degree of cunning, as sometimes to be called by the country people *River-fox*. When attempted to be taken by a net, they will often leap over it; or immerse themselves so deep in the mud, as to suffer the net to pass over without touching them. They are also very shy of taking a bait; but, during spawning-time, they are so intent on the business of depositing their ova, that they will suffer themselves to be handled by any one who attempts it. They breed three or four times in the year, but their first spawning is in the beginning of May.

COMMON CARP.

Carp are found in the slow rivers and stagnant waters of Europe and Persia; and here principally in deep holes, under the roots of trees, hollow banks, or great beds of flags, &c. They do not often exceed four feet in length, and twenty pounds in weight; but Jovius mentions some, caught in the lake of Como, in Italy, that weighed two hundred pounds each; and others have been taken in the Dneister five feet in length.

From their quick growth and vast increase, these are considered as the most valuable of all fish for the stocking of ponds; and if the breeding and feeding of them were better understood, and more practised, than they are, the advantages resulting from them would be very great.

By being constantly fed, they may be rendered so familiar as always to come, for food, to the side of the pond where they are kept. Dr. Smith, speaking of the Prince of Condé's seat at Chantilly, says, "The most pleasing things about it were the immense shoals of very large Carp, silvered over with age, like silver fish, and perfectly tame; so that, when any passengers approached their watery habitation, they used to come to the shore in such numbers as to heave each other out of the water, begging for bread, of which a quantity was always kept at hand on purpose to feed them. They would even allow themselves to be handled."

Carp are very long-lived: the pond in the garden of Emanuel

College, Cambridge, contained a Carp that had been an inhabitant of it more than seventy years; and Gesner has mentioned an instance of one that was an hundred years old. They are also extremely tenacious of life, and will live for a great length of time out of water.

THE TENCH.

TENCH.

Tench are partial to foul and weedy waters; and their haunts in rivers are chiefly among weeds, and in places well shaded with rushes. These fish thrive best in standing waters, where they lie under weeds, near sluices and pond-heads. They are much more numerous in pools and pits than in rivers; but those that are caught in the latter, are far preferable for the table. They begin to spawn in June, and may be found spawning in some waters till September. The best season for them is from that time until the end of May.

They do not often exceed four or five pounds in weight.

THE GUDGEON.

GUDGEON.

The food of the Gudgeon consists of aquatic plants, worms, the larvæ of water-insects, and the spawn of fish. They usually swim in small shoals, and are found in gentle streams, where the bed is of sand or gravel. If the bed of the stream be raked or stirred up, they eagerly collect round the spot, and are easily caught with lines baited with small earth-worms.

The flesh of the Gudgeon is white, of excellent flavor, and easy of digestion.

THE CHUB.

CHUB.

The Chub is a handsome fish; but it is not in esteem for the table, being very coarse, and, when out of season full of small, hairy bones. Its name is derived from the shape of its head; the French and Italians know it by a name synonymous with ours.

Its haunts are rivers, whose bottoms are of sand or clay, or which are bounded by clayey banks; in deep holes, under hollow banks,

shaded by trees or weeds. These fish often float on the surface, and are sometimes found in deep waters, where the currents are strong. In ponds fed by rivulets they grow to a great size. They seldom, however, exceed the weight of four or five pounds.

When the Chub seizes a bait, he bites so eagerly that his jaws are often heard to chop like those of a Dog. He, however, seldom breaks his hold, and, when once he is struck, is soon tired.

THE DACE.

The Dace is a gregarious and lively fish; and during summer is fond of playing near the surface of the water. It is generally found where the water is deep, and the stream is gentle, near the piles of bridges. It also frequents deep holes that are shaded by the leaves of the water-lily; and under the foam on the shallows of streams.

DACE.

These fish seldom weigh more than a pound and a half; but they are exceedingly prolific.

THE ROACH.

This fish is found chiefly in deep, still rivers, where it is often seen in large shoals. In summer it frequents shallows near the tails of fords; or lies under banks among weeds, and shaded by trees or herbage, especially where the water is thick. As the winter approaches, these haunts are changed for deep and still waters.

ROACH.

The Roach is so silly a fish, that it has acquired the name of the *Water-sheep*, in contradistinction to the Carp, which from its subtlety is termed the River-fox. *Sound as a Roach*, is a proverb that appears but indifferently founded.

This is a handsome fish, either in the water or when immediately taken out of it. The flesh, although reckoned wholesome, is in little esteem, on account of the great quantity of bones. When Roach are in season, their scales are very smooth; but when they are out of season, these feel like the rough side of an oyster-shell. Their fins also are generally red when the animals are in perfection. These fish differ much in quality, according to the rivers in which they are caught. None are good that are kept in ponds.

Roach feed on aquatic plants and vermes. Their usual weight is from half a pound to two pounds. Some, however, have been known to weigh as much as five pounds.

The baits used in catching Roach are various kinds of worms, flies, and pastes. The time for angling is, in mild cloudy weather, all the day; in hot weather, only in the mornings and evenings; and in cold weather, during the middle of the day.

THE GOLD-FISH.

Gold-fish are natives of China; and the most beautiful kinds are caught in a small lake in the province of Chekyang, at the foot of a mountain called Tsyen-king. They were first introduced into England about the year 1691, but were not generally known till thirty years afterwards.

GOLD-FISH.

In China they are kept in ponds, or large porcelain vessels, by almost every person of distinction. In these they are very lively and active, sporting about the surface of the water with great vivacity; but they are so delicate, that, if cannon be fired, or any substance giving out a powerful smell, as pitch or tar, are burned near them, great numbers will be killed. In each of the ponds or basins where they are kept, there is an earthen pan, with holes in it, turned upside down. Under this they retire when, at any time, they find the rays of the sun too powerful. The water is changed three or four times a week. Whilst this is done, it is necessary to remove the fish into another vessel; but they ought always to be taken out by means of a net, for the least handling would destroy them.

When Gold-fish are kept in ponds, they are often taught to rise to the surface of the water, at the sound of a bell, to be fed. At Pekin, for three or four months of the winter, or whilst the cold weather lasts, the fish in the ponds are not fed at all. They are able, during that time, to obtain the small quantity of food which they require, from the water. In order to prevent their being frozen, they are often taken into the houses, and kept in china vessels, till the warm weather of spring allows their being returned to their ponds with safety.

In hot countries, Gold-fish multiply very fast, if care be taken to remove the spawn, which swims on the surface of the water, into other ponds; for otherwise, the animals would devour the greater part of it. The young fry, when first produced, are perfectly black; but they afterwards change to white, and then to gold color. The latter colors appear first about the tail, and extend upwards.

The smallest fish are preferred, not only from their being more beautiful than the larger ones, but because a greater number of them can be kept. These are of a fine orange red color, appearing as if sprinkled over with gold-dust. Some, however, are white, like silver, and others white spotted with red. When dead they lose all their lustre. The females are known from the males by several white spots

which they have near the gills, and the pectoral fins: the males have these parts very bright and shining.

In China the Gold-fish are fed with balls of paste, and the yolks of eggs boiled very hard. In England, many persons are of opinion that they need no aliment. It is true that they will subsist for a long while without any other food than what they can collect from water frequently changed; yet they must draw some support from animalcules and other nourishment supplied by the water. That they are best pleased by such slender diet may easily be confuted, since they will readily, if not greedily, seize crumbs that are thrown to them. Bread ought, however, to be given sparingly, lest, turning sour, it corrupt the water.

Gold-fish do not often multiply in very close confinement. If it be desirable to have them bred, they must be put into a tolerably large reservoir, through which a stream of water runs, and in which there are some deep places.

When the Gold-fish was originally brought from China to England, about two hundred years since, it was considered a great curiosity; now, however, it is quite common, and is found to live in ponds even when the surface of the water is thickly covered with ice. The ponds in Christ Church College, and the Botanic Gardens, Oxford, are thickly populated with these beautiful fish, which increase with the most marvelous rapidity. The pond in the centre of the Clarendon Printing Office was stocked with these fish, and as the spare water from the steam-engine used in the works passed into the pond, they throve amazingly. One unfortunate morning, the surface of the pond was covered with Golden Carp, all floating dead. Some verdigris had formed in some part of the engine, had been washed into the pond, and had poisoned all its finny inhabitants.

Gold-fish appear to have been first brought to the United States from England. They were rapidly diffused to every part of the country. Formerly they were considered great rarities and were seen only in the parlors and conservatories of wealthy people, where, in their highly ornamented glass globes and vases, they attracted much attention and admiration; but now they are raised in ponds for sale, are kept by all classes of people in their houses for ornaments; and form one of the usual attractions to the soda water fountain. In these latter places they are kept in elegantly wrought marble vases. The keeping of them costs very little trouble, the principal precaution necessary for their healthy existence being a frequent change of the water in the globe or vase in which they live.

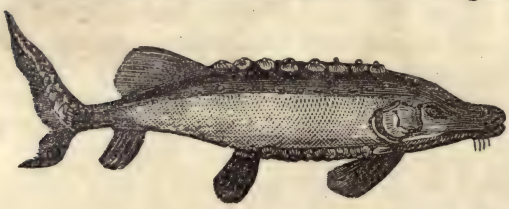
CHONDROPTERYGIOUS FISH.

OF THE STURGEONS IN GENERAL.

All the species of Sturgeons are inhabitants of the sea, though some of them occasionally go up the wider rivers to spawn. They are of large size, seldom measuring, when full-grown, less than three or four feet in length The flesh of the whole is reckoned extremely delicious; and to the inhabitants on the banks of the Caspian Sea, and indeed of many other parts both of Europe and America, these fish are very useful as an article of commerce. Their usual food is worms and other fish.

THE COMMON STURGEON.

The tendrils on the snout of the Sturgeon are three or four inches in length, and have so great a resemblance in form to earth-worms, that at first sight, they might be mistaken for such. This clumsy, toothless fish, is supposed, by this contrivance, to keep himself in good condition, the solidity of his flesh evidently showing him to be a fish of prey. He is said to hide his large body among the weeds near the sea-coast, or at the mouths of large rivers, only exposing his tendrils. Small fish or sea-insects, mistaking these for real worms, approach in the hope of obtaining food, and are sucked into the jaws of their enemy. The Sturgeon has been supposed by some persons, to root into the mud at the bottom of the sea or rivers; but the tendrils above mentioned, which hang from his snout over his mouth, must themselves be very inconvenient for this purpose; as he has no jaws, he evidently lives by suction, and, during his residence in the sea, marine insects are generally found in his stomach.



COMMON STURGEON.

At the approach of spring, Sturgeons leave the deep recesses of the sea, and enter the rivers to spawn; and from May to July the American rivers abound with them. Here they are often observed to leap to the height of several yards out of the water; this they do in an erect position, falling back again on their sides with such noise, as to be heard in still evenings at a great distance. They have often been known, at these times, to fall into small boats, and sink them.

In some rivers of Virginia, Sturgeons are found in such numbers, that six hundred have been taken in two days, with no more trouble than putting down a pole, with a hook at the end, to the bottom, and drawing it up again, on feeling it rub against a fish. They are, however, chiefly killed in the night with harpoons, attracted by the light of torches made of the wood of the black pine. On the shores are frequently seen the bodies of Sturgeons that have been wounded with spears, and have afterwards died.

The fecundity of these fish is exceedingly great. Catesby says, that the females frequently contain a bushel of spawn each; and Leeuwenhoek found in the roe of one of them no fewer than one hundred and fifty billion eggs.

OF THE SHARK TRIBE.

THE animals that compose this rapacious tribe, are entirely marine and are more frequent in hot than in temperate climates. They are in general solitary, and often wander to vast distances, devouring almost everything that comes in their way, which they are able to swallow. Some of them will follow vessels several hundred leagues, for the carcasses and filth that are thrown overboard. The size to which they grow is enormous, as they often weigh from one to four thousand pounds each. Some few species are gregarious, and live on molluscæ and other marine worms. They are all viviparous; their offspring when first protruded, being enclosed (alive) in a square, pellucid, horny case, terminated at the four corners by long, slender filaments, which are generally found twisted round corallines, sea-weed, and other fixed substances.

SHARK.

Their flesh is altogether so tough, coarse, and of such a disagreeable smell, that even the young-ones are scarcely eatable. Their bodies emit a phosphoric light in the dark. The skin is rough, and is in general use for polishing ivory, wood, and other substances; thongs and carriage traces are also occasionally made of it. The liver is generally found to yield a considerable quantity of oil. There are upwards of thirty species.

THE WHITE SHARK.

This dreadful species of Shark has six rows of teeth, hard, sharply-pointed, and of a wedge-like figure. These he has the power of erecting and depressing at pleasure. When the animal is at rest, they are quite flat in his mouth; but, when prey is to be seized, they are instantly erected by a set of muscles that join them to the jaw. Thus, with open mouth, goggling eyes, and large and bristly fins, his whole aspect is an emphatical picture of the fiercest, deepest, and most savage malignity.

WHITE SHARK.

It is a fortunate circumstance, for those who would avoid its attacks, that its mouth is so situated, under the head, that it has to throw itself on one side in order to seize its prey; for its velocity in the

SHARK FISHING.

water is so great, that nothing of which it was once in pursuit, would otherwise be able to escape its voracity.

These creatures are the dread of sailors in all the hot climates; for they constantly attend ships, in expectation of what may be thrown

overboard; and if, while a Shark is present, any of the men have that misfortune, they inevitably perish.

The master of a Guinea-ship informed Mr. Pennant, that a rage for suicide prevailed among his slaves, from an opinion entertained by the unfortunate wretches, that, after death, they should be restored to their families, friends, and country. To convince them that their bodies could never be reanimated, he ordered the corpse of one that was just dead, to be tied by the heels to a rope, and lowered into the sea. It was drawn up again as quickly as the united force of the crew could do it; yet, in that short time, the Sharks had devoured every part but the feet, which were secured by the end of the cord.

Persons, while swimming, have often been seized and devoured by Sharks. The late Sir Brooke Watson was, some years ago, swimming at a little distance from a ship, when he saw a Shark making towards him. Struck with terror at its approach, he cried out for assistance. A rope was instantly thrown; and even while the men were in the act of drawing him up the ship's side, the monster darted after him, and, at a single snap, tore off his leg.

In the pearl-fisheries of South America, every negro, in order to defend himself against these animals, carries with him into the water a sharp knife, which, if the fish offers to assault him, he endeavors to strike into its belly; on which it generally swims off. The officers who are in the vessels, keep a watchful eye on these voracious creatures; and, when they observe them approach, shake the ropes fastened to the negroes, in order to put them on their guard. Many, when the divers have been in danger, have thrown themselves into the water, with knives in their hands, and have hastened to their defence; but too often all their dexterity and precaution have been of no avail.

We are told, that in the reign of Queen Anne some of the men of an English merchant-ship, which had arrived at Barbadoes, were one day bathing in the sea, when a large Shark appeared, and sprung forward directly at them. A person from the ship called out to warn them of their danger; on which they all immediately swam to the vessel, and arrived in perfect safety, except one poor man, who was cut in two by the Shark, almost within reach of the oars. A comrade and intimate friend of the unfortunate victim, when he observed the severed trunk of his companion, was seized with a degree of horror, that words cannot describe. The insatiable Shark was seen traversing the bloody surface in search of the remainder of his prey, when the brave youth plunged into the water, determining either to make the Shark disgorge, or to be buried himself in the same grave. He held in his hand a long and sharp-pointed knife, and the rapacious animal pushed furiously towards him; he had turned on his side, and had opened his enormous jaws, in order to seize him, when the youth, diving dexterously under, seized him with his left hand somewhere before the upper fins, and stabbed him several times in the belly. The Shark, enraged with pain and streaming with blood, plunged in all directions in order to disengage himself from his enemy. The crews of the surrounding vessels saw that the combat

was decided; but they were ignorant which was slain, until the Shark, weakened by loss of blood, made towards the shore, and along with him his conqueror; who, flushed with victory, pushed his foe with redoubled ardor, and by the aid of an ebbing tide, dragged him on shore. Here he ripped up the bowels of the animal, obtained

ATTACKING A WHITE SHARK.

the severed remainder of his friend's body, and buried it with the trunk in the same grave. This story, however incredible it may appear, is related in the history of Barbadoes, on the most satisfactory authority.

The South Sea islanders are not in the least afraid of the Sharks, but will swim among them without exhibiting the least signs of fear. "I have seen," says Captain Portlock, "five or six large Sharks swimming about the ship, when there have been upwards of a hundred Indians in the water, both men and women: they seem quite indifferent respecting them, and the Sharks never offered to make an attack on any of these people, and yet at the same time would greedily seize our baits; whence it is manifest that these people derive their confidence of safety from their experience, that they are able to repel the attacks of those devouring monsters."

A sailor, on the coast of California, on plunging into the sea, was seized by a Shark; but, by a most extraordinary feat of activity, he cleared himself, and, though much wounded, threw blood and water at the animal, to show his bravery and contempt. But the voracious monster seized him with horrid violence a second time, and in a moment dragged him to the bottom. His companions,

though not far from him, and much affected by the loss, were not able to render him any assistance.

We are told that notwithstanding the voracity of these creatures, they will not devour any feathered animal that is thrown overboard;

ESCAPE FROM A SHARK.

but that they will readily take a bait of a piece of flesh fastened on an iron crook. They are so tenacious of life, as to move about long after their head is cut off.

Their flesh is sometimes eaten by sailors on long voyages; and, though exceedingly coarse and rank, it is generally considered better than that of any others of the tribe. The skin is rough, hard, and prickly; and, when properly manufactured, is used in covering instrument cases, under the name of *shagreen*.

THE HAMMER-HEADED SHARK.

The Hammer-headed Shark inhabits the same latitudes. This curiously constructed fish closely resembles the White Shark in all respects but the head, which is widened out at each side, exactly like a double-headed hammer or mallet. The eyes, being placed at each extremity of the head, must of course possess a very extended power of vision.

THE BASKING SHARK, OR MONK FISH.

This species has derived its name from its propensity to lie on the surface of the water, as if to bask itself in the sun. Though a very large fish, it possesses none of the voracity and ferociousness that mark the generality of the Shark tribe. It will frequently lie motionless on the surface of the water, generally on its belly but sometimes on its back; and it seems so little afraid of mankind, as often to suffer itself to be patted and stroked.

Their food consists entirely of marine-plants, and some of the species of medusæ. They swim very deliberately, and generally with their upper fins above water. Sometimes they may be seen sporting about among the waves, and leaping several feet above the surface.

MONK FISH, OR BASKING SHARK.

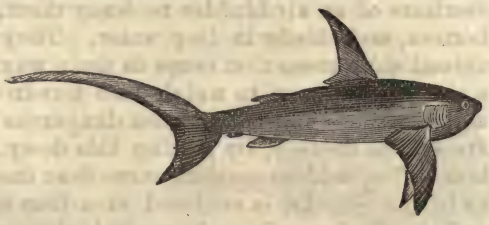
Their liver is of such immense size, as frequently to weigh nearly a thousand pounds. From this a great quantity of good oil may be extracted; so much, indeed, that the oil of a single fish will sometimes sell for twenty or thirty pounds sterling.

The inhabitants of the northern coasts of Europe are very alert in the pursuit, and very dexterous in the killing, of these fish. When pursued, the Basking Shark does not accelerate its motion, till the boat comes almost in contact with it, when the harpooner strikes his weapon into its body, as near the gills as he can. These animals seem not to be very susceptible of pain; for they often remain in the same place, till the united strength of two men is exerted to force the harpoon deeper. As soon as they perceive themselves wounded, they plunge headlong to the bottom; and frequently coil the rope round their bodies in agony, attempting to disengage themselves from the fatal instrument, by rolling on the ground. Discovering that these efforts are in vain, they swim off with such amazing rapidity, that one instance has occurred of a Basking Shark towing to some distance a vessel of seventy tons burden, against a fresh gale. They sometimes run off with two hundred fathoms of line, and two harpoons in them; and will employ the men from twelve to twenty-four hours before they are subdued.

As soon as they are killed, the fishermen haul them on shore; or, if at a distance from land, to the vessel's side, to cut them up and take out the liver, which is the only useful part of their bodies. This is melted into oil, in kettles provided for the purpose; and, if the fish be a large one, it will yield eight barrels or upwards.

THE FOX SHARK.

The Fox Shark, sometimes called the Thresher, is found in higher latitudes than others of the same family. It is most remarkable for the great length of its tail, the body being about seven feet, and the tail six feet long. The head is short and conical; the eyes are large; the jaws are armed in a dreadful manner with three rows of triangular, compressed, and pointed teeth; the tongue is blunt. It is extremely voracious. The ancients believed, that when it had the misfortune to have taken a bait, it swallowed the hook till it got at the cord, which it bit off, and so escaped.



FOX SHARK.

THE COMMON DOG-FISH.

So excessively voracious are these animals, that they are altogether fearless of mankind. They follow vessels with great eagerness, seizing with avidity every thing eatable that is thrown overboard; and they have sometimes been known to throw themselves on fishermen, and on persons bathing in the sea. As, however, they are smaller and more weak than most other Sharks, they do not attack their more exposed enemies by open force. In combating them, it is necessary to have recourse to stratagem. They consequently, for this purpose, conceal themselves in mud, and lie in ambush, like the Rays, until they have an opportunity of acting offensively with success. Their usual food consists of fish and other marine animals, of which they destroy immense numbers.

These fish are found in the seas of all climates, both hot and cold: they equally abound on the coasts of Great Britain, Norway, the Cape of Good Hope, and the Canary Islands; and of those countries which lie immediately under the equinoctial line.

Their flesh is hard and disagreeable to the taste, diffusing also a strong odor, which somewhat resembles that of musk. Their dried skins constitute the well-known article of commerce called *shagreen*, or the *skin of the Dog-fish*. The small and hard tubercles with which these are covered, render them useful in the polishing of wood, ivory, and even of iron. A considerable quantity of oil may be extracted from the livers of Dog-fish.

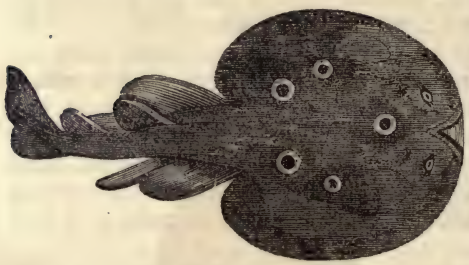
OF THE RAY TRIBE.

THE Rays are entirely confined to the sea; and, from being destitute of an air-bladder to buoy them, they live altogether at the bottom, and chiefly in deep water. They subsist on shell-fish, or any animal substances that come in their way. Some of them become of a size so large, as to weigh two hundred pounds and upwards; in which case they are sometimes dangerous enemies to man, whom they are said to destroy, by getting him down, lying upon, and devouring him. They seldom produce more than one young-one at a time. This, as in the Sharks, is enclosed in a four-cornered bag or shell, which ends in slender points; but which does not (as in those) extend into long filaments. The liver is large, and often produces a great quantity of oil.

In a fresh state, most of the Rays have a fetid and unpleasant smell, but nearly the whole are eatable. There are about *twenty* species. Those with which we are best acquainted, are the Skate, the Thornback, and the Torpedo, or Electric Ray.

THE TORPEDO, OR ELECTRIC RAY.

Torpedoes are partial to sandy bottoms, in about forty fathoms of water, where they often bury themselves by flinging the sand over them, with a quick flapping of all their extremities. In Torbay they are generally caught, like other flat-fish, with trawl-nets; and instances have occurred of their seizing a bait.



TORPEDO.

This fish possesses the same property of benumbing its prey, as that already described in the Electric Eel; and when it is in health and vigor, the shock that it communicates is very severe: but its powers always decline as the animal declines in strength; and when it expires, they entirely cease. In winter these fish are also much less formidable than during warm weather.

Dr. Ingenhousz had for some time, in a tub of sea-water, a Torpedo which, during winter, seemed to be feeble. On taking it into his hands, and pressing it on each side of the head, a sudden tremor, which lasted for two or three seconds, passed into his fingers, but extended no further. After a few seconds, the same trembling was felt again; and again several times, after different intervals. The sensation, he says, was similar to that which he should have felt by the discharge of several small electrical bottles, one after another, into

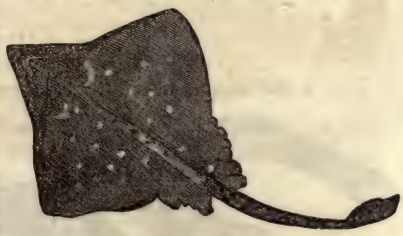
his hand. The shocks sometimes followed each other very quickly, and increased in strength towards the last. Probably, from the weakness of the fish, the shock could not be communicated through a brass chain, though the usual contortion was evidently made. A coated vial was applied to it, but could not be charged.

From some experiments that were made by Mr. Walsh, on a very stout and healthy Torpedo, it appears that although it seemed to possess many electric properties, yet no spark whatever could be discovered to proceed from it, nor were pith-balls ever found to be affected by it. When it was insulated, it gave a shock to persons likewise insulated, and even to several that took hold of each other's hands: this it did forty or fifty times successively, and with very little diminution of force. If touched only with one finger, the shock was so great as to be felt in both hands. Each effort was accompanied by a depression of the eyes, which plainly indicated the attempts that were made upon non-conductors. Although the animal was in full vigor, it was not able to force the torpedinal fluid across the minutest tract of air, not even from one link of a small chain freely suspended to another, nor through an almost invisible separation made by a penknife in a slip of tin-foil pasted on sealing-wax.

TORPEDO.

THE SKATE AND THORNBACK.

The Skate is the largest, and at the same time the most useful fish of its tribe. Its flesh is white, firm and good. In some parts of the Continent, where these fish are caught in great abundance, they are dried for sale. The best season for Skate is the spring of the year. They sometimes attain a very large size. Willougby speaks of one so huge, that it would have served one hundred and twenty men for dinner.



SKATE.

From the month of May, until the beginning of September, the females are occupied in producing their offspring. This they usually do on coasts and in places where they are liable to little interruption. Each of the young-ones is enclosed in an oblong, angular bag, about half an inch thick in the middle. These are called *purses* by the fishermen. After the fish have escaped, the empty bags are frequently cast ashore by the tide.

Dr. Monroe has remarked, that in the gills of a large Skate there are upwards of one hundred and forty-four thousand subdivisions, or folds; and that the whole extent of this membrane, whose surface is nearly equal to that of the whole human body, may be seen, by a

microscope, to be covered with a net-work of vessels that are not only extremely minute, but exquisitely beautiful.

In all its habits the *Thornback* resembles the Skate, except as to the time in which its offspring are produced. This is usually about the months of June and July; during which time these fish are caught in great numbers.

OF THE LAMPREY TRIBE.

The bodies of these fish are slippery and mucous. Three of the species are inhabitants exclusively of fresh waters, and one only is known to frequent the sea. They are all much esteemed as food. So tenacious are they of life, that they will even continue firmly attached, by their mouths, to solid bodies, for some time after they are cut in half. They feed on worms, insects, small fish, and mud or aquatic plants.

SPEARING FISH.

THE TRUE AND LESSER LAMPREY.

The surprising faculty of adhesion to solid bodies, possessed by these fish, arises from their drawing up the middle of their circular mouth, and exhausting the air from under it. The edges of the mouth are thus pressed closely down to the object, by the weight of the superincumbent atmosphere.

LAMPREY.

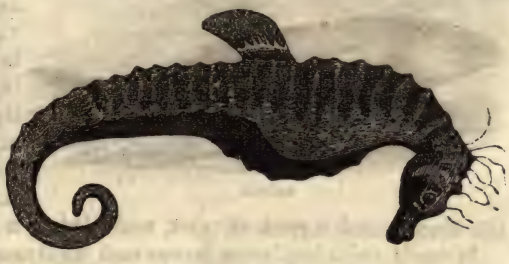
Possessed of an apparatus so formidable as the mouth of the True Lamprey, this fish, although it feeds on animal substances, does not attack the larger and more powerful inhabitants of the water. It usually preys on marine worms and small fish; and, like the Eel, will even content itself with the flesh of dead and putrid animals. In fact, the teeth, from the circumstance of their not being fixed in bony jaws, are inca-

pable of offensive operations against animals more powerful than themselves.

The branchial orifices, or gills, on each side of the neck of the Lamprey, are mistaken by many persons for eyes. This fish is destitute of bones. having only strong cartilages in place of them.

THE SEA-HORSE.

The singular fish called the Sea-Horse has often been found off the southern coasts of England. The habits of this fish are very singular and interesting. A pair were kept alive for some time in a glass vessel, and exhibited considerable activity and intelligence. They swam about with an undulating kind of movement, and frequently twined their tails round the weeds placed in their prison. Their eyes moved independently of each other, like those of the Chameleon, and the changeable tints of the head closely resemble that animal.



SEA-HORSE.

More than once, these curious fish have been seen curled up in oyster shells.

PIPE-FISH.

The singular creatures called Pipe-fish also belong to the Syngnathidæ.

THE ANGLER, OR FISHING FROG

The Angler, or Fishing Frog, as it is more generally called, is not uncommon in all the European seas. The peculiar formation of its pectoral fins enables it to crawl for some distance on land.

On its head are two elongated bony appendages, curiously articulated to the skull by a joint formed something like the links of a chain, and capable of movement in any direction. The Angler couches close to the bottom of the sea, and by the movement of its pectoral fins stirs up the sand and mud, and agitates the bony appendages amid the turbid cloud produced. The small fishes, observing the muddy water, and taking the filaments for worms, approach to seize them, and are instantly engulphed in the capacious jaws of the crafty Angler.

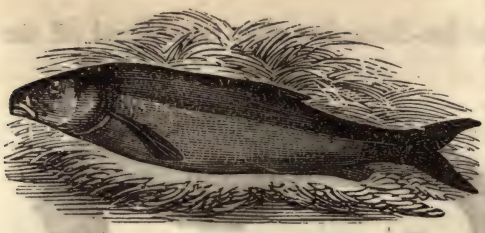
ANGLER.

The voracity of the Angler is so great, that when caught in a net

together with other fish, it generally devours some of its fellow prisoners—a useless act, for the fishermen mostly open its stomach, and recapture the flounders and other fish found in its interior.

THE BARBEL.

The Barbel is found in most of the European rivers. Its flesh is course and unsavory, but it is eagerly sought after by anglers, as the spirit and vigor displayed by it when hooked afford fine sport. It is peculiarly apt at breaking the line, a feat sometimes accomplished by a violent blow of the tail, and sometimes by contriving to twist the line round a root or post, and giving a sudden jerk.



BARBEL.

It feeds principally on larvæ and molluscs, inhabiting the banks, and obtains them by rooting in the sand with its snout. The Barbels, or beards, hanging from the upper jaw doubtless assist in these investigations. It frequently grows to a very great size, weighing from fifteen to eighteen pounds, and measuring upwards of three feet in length. Many are captured by nets during the summer, at which season they frequent the weedy parts of the river in shoals; but in winter they retire to the shelter afforded by banks and old woodwork. Several good swimmers have been known to dive after the Barbel, as they lay pressed against the banks, and to bring up one each time, not unfrequently appearing with two, one in each hand.

THE LOACH.

In some countries the Loach goes by the name of "Beardie," in allusion to the little fleshy particles that hang from its lips. It has also the name of Groundling, on account of its habit of living close to the bottom of the water.

LOACH

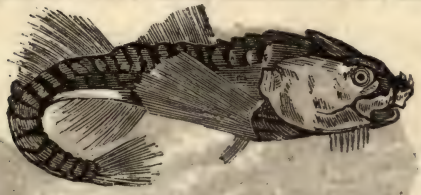
It is a common fish, and may be taken in most streams, especially if the bait is drawn over the bed of the stream. The principal peculiarity about the fish, is the comparatively great breadth of the tail where it joins the spine. This formation, together with the generally pellucid appearance of its body, at once distinguish it from any other fish.

THE BLENNIES.

The species of this genus are small, live in shoals, but not in great numbers: they are very active and tenacious of life, and frequent rocky coasts, where they may often be found in the pools of water left by the tide, hiding themselves among the weeds, and in the crevices of the rocks.

BLENNIES.

THE FATHER LASHER.

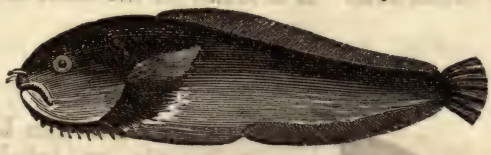


FATHER LASHER.

The Father Lasher is found on the European coasts. It has a slender body, thick neck, and is a very rapid swimmer. It feeds on smaller fish, and receives its name from its violent efforts when taken.

THE SUCKING FISH.

The great resort of this species is in the northern seas, about the coast of Greenland. Great numbers are devoured by Seals, who swallow all but the skins; quantities of which, thus emptied, are seen floating about in the spring months.



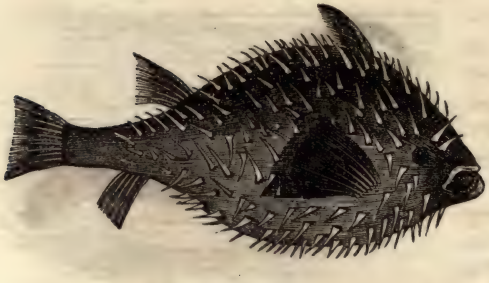
THE SUCKING FISH.

THE HORNED SILURUS.

HORNED SILURUS.

The Horned Silurus are chiefly distinguished by the want of true scales, having merely a naked skin, or large osseous plates. The species included in this group are mostly river-fish, of considerable size, inhabiting warm climates.

THE SEA PORCUPINE.



SEA PORCUPINE.

The Sea Porcupine is found on the coast of Guinea, and in the Indian Ocean. Like the common Porcupine, it is covered with quills or spines, which it can erect at pleasure when angry.

THE LUMP SUCKER.

This fish derives it name from the clumsiness of its form: its height being about half its length, and its thickness about half its height. These fish are very remarkable for the manner in which their ventral fins are arranged. They are united by a membrane so as to form a kind of oval and concave disc, by means of which they are enabled to adhere with great force to any substance to which they apply themselves. It is found on the coast of Greenland.

THE LUMP SUCKER.

THE DEVIL FISH.

THE DEVIL FISH.

The Sea Devil, or Fishing Frog, is an inhabitant of the British Seas. It grows to a large size, some being between four and five feet long. The fishermen on that coast have a great regard for this fish, from a supposition that it is a great enemy to the Dog-fish; and whenever they take it with their lines, set it at liberty. It is a fish of very great deformity; the head is much bigger than the whole body; is round at the circumference, and flat above, the mouth of a prodigious wideness.

INSECTS.

COLEOPTEROUS INSECTS.

THE insects of the Linnean order *Coleoptera* have crustaceous elytra or wing-cases, which shut together and form a longitudinal suture down the back.

OF THE SCARABÆUS, OR BEETLE TRIBE.

THE larvæ or grubs of these insects have each six feet. In their general appearance they are not much unlike the Caterpillars of some of the Butterflies, having their bodies composed of rings, and being somewhat hairy. Most of them live entirely under the surface of the ground, and feed on the roots of plants, &c. Their *pupa*, or *chrysalis*, generally lies dormant in the earth till the perfect insect bursts out.

Beetles inhabit and feed in various situations. Some are found in the dung of animals, or in the earth immediately under the dung. Others live on the leaves of trees; and others on flowers.

THE BULL-COMBER, CLOCK-BEETLE, AND SPRING BEETLE.

These insects are all nourished, both in their larva and perfect state, in the dung of animals, which they are able to discover by their acute faculty of smell, or otherwise, at an immense distance. Under these substances they dig, in the earth, cylindrical holes, of considerable depth, in which they deposit their eggs.

CLOCK-BEETLE.

They usually fly in the evening, towards the end of twilight. The droning noise produced by their wings, at that time, is often heard, particularly during the summer season. When touched, these insects counterfeit death; but they do not contract their legs, in the manner of the Dermestes, and some other Beetles: they stretch them out, so as to give the appearance of stiffness and rigidity, as though the animals had been some time dead.

All these insects are subject to be infested by a species of *acarus*, or tick, and sometimes in such numbers that they are scarcely able to walk in consequence of these crowding closely round the joints of the legs and thighs. A German writer states, that the females of that country used formerly to employ the thighs of some of the most brilliant of these Beetles, in the ornamental parts of their head-dress.

THE COCK-CHAFER.

The eggs of the Cock-chafer are deposited in the ground by the parent insect, whose fore-legs are very short, and are well calculated for burrowing. From each of these eggs proceeds, after a short time, a whitish worm with six legs, a red head, and strong claws, and about an inch and a half long, which is destined to live in the earth under that form for four years, and there to undergo various changes of its skin, until it assumes its chrysalid form. It subsists, during its subterraneous abode, on the roots of trees and plants, committing ravages often of the most deplorable nature.

The larvæ, continue four years in the ground; and when, at the end of this period, they are about to undergo their change, they dig deep into the earth, sometimes five or six feet, and there spin a smooth case, in which they change into a *pupa* or chrysalis. They remain under this form all the winter, until the month of February, when they become perfect Beetles, but with their bodies quite soft and white. In May the parts are hardened, and they then come forth out of the earth. This accounts for our often finding the perfect insects in the ground.

Cock-chafers fly in the evening towards sunset, and particularly about places where there are trees. They eat the leaves of the sycamore, the lime, the beech, the willow, and those of all kinds of fruit-trees. In its winged state this insect exhibits not less voracity on the leaves of trees, than it before did in its grub state in the earth; for, such is the avidity with which it devours its food, and so immense are sometimes the numbers, that, in particular districts, they have become an oppressive scourge, which has produced much calamity among the people.

In the year 1688, the Cock-chafers appeared on the hedges and trees of the south-west coast of the county of Galway, Ireland, in clusters of thousands, clinging to each other's backs, in the manner of bees when they swarm. During the day they continued quiet, but towards sunset the whole were in motion; and the humming noise of their wings sounded like distant drums. Their numbers were so great, that, for the space of two or three square miles, they entirely darkened the air. Persons travelling on the roads, or who were abroad in the fields, found it difficult to make their way home, as the insects were continually beating against their faces, and occasioned great pain. In a very short time, the leaves of all the trees, for several miles round, were destroyed, leaving the whole country, though it was near mid-summer as naked and desolate as it would have been in the middle

of winter. The noise which these enormous swarms made in seizing and devouring the leaves, was so loud as to have been compared to the distant sawing of timber. Swine and poultry destroyed them in vast numbers. These waited under the trees for the clusters dropping, and devoured such swarms as to become fat upon them alone. Even the native Irish, from the insects having eaten up the whole produce of the ground, adopted a mode of cooking them, and used them as food. Towards the end of summer they disappeared so suddenly, that, in a few days, there was not a single one left.

About sixty years ago a farm near Norwich, England, was so infested with Cock-chafers, that the farmer and his servants affirmed that they gathered eighty bushels of them; and the grubs had done so much injury, that the court of that city, in compassion to the poor man's misfortune, allowed him 25*l.*

Rooks and Gulls devour immense numbers of the grubs of this destructive insect, by which they render a most essential service to mankind, and great care ought to be taken to cherish and protect them. The chief employment of Rooks, during nearly three months in the spring of the year, is to search for insects of this sort as food; and the havoc that a numerous flock makes among them must be very great.

A gentleman, having found a nest of five young Jays, remarked that each of these birds, while yet very young, consumed at least fifteen full-sized grubs of the Chafer in a day; and averaging their sizes, it may be said that each consumed twenty: this for the five makes a hundred; and if we suppose the parents to devour between them the same number, it appears that the whole family consumed about two hundred every day. These in three months, would amount to twenty thousand. But as the grub continues in the same state for four years, this single pair, with their family alone, without reckoning their descendants after the first year, would destroy as many as eighty thousand grubs. Now, supposing that forty thousand of these may be females, and that each female lays, as is the case, about two hundred eggs, it will appear that no fewer than *eight millions* of grubs have been destroyed, or at least prevented from being hatched, by this single family of Jays.

It is true, that in these labors of the Rooks, Jays, and some other birds, they sometimes do mischief to man; and yet there can be little doubt, that the damage they thus commit is amply repaid by the benefits that result from these their unceasing exertions.

Some farmers plough the ground in order to expose the grubs to the birds; and others take the pains to dig deeper, wherever the Rooks point them out by their attempts to reach them. When the insects are in their winged state, to shake the trees at noon, during the time that they are all either asleep or in a state of inactive stupor, and to gather or sweep them up from the ground, seems the most eligible method. One person has been known to kill in a day, by this method, above a thousand: by which, though in so short a space of time, at a fair calculation, he prevented no fewer than a hundred thousand eggs from being laid.

THE ROSE-CHAFER.

There are scarcely any of the Chafers more beautiful than this. The upper parts of the female are of a shining green color, marked transversely on the wing-cases with a few short white or yellowish lines. The male is of a burnished copper-color, with a greenish cast. These insects are somewhat more than an inch in length. They are found on flowers, particularly on those of the rose and peony.

The grubs that produce this beetle feed underground, generally at the roots of trees, and never appear on the surface unless disturbed by digging, or some other accident. They are thought to be injurious to the gardener, by devouring the roots of his plants and trees. The female deposits her eggs in the middle of June. For this purpose she burrows into soft, light ground, hollowing out and forming for them a proper receptacle. When the operation is over, she returns to the surface and flies off, but seldom lives more than two months afterwards. The grubs are produced in about fourteen days, and immediately seek out for food, which the parent always takes care to have near the place where she lays her eggs. As soon as they have attained sufficient strength, the young grubs separate, each burrowing in a different direction, in search of roots. They remain four years in this state, annually changing their skin till they become of full growth, when they are of a cream-color, with brown head and feet. During winter they eat but little, if at all, and they retire so deeply into the ground as to avoid the effects of the frost.

ROSE-CHAFER.

About the month of March, at the end of the fourth year, the grub forms a case of earth, about the size of a walnut, somewhere near the surface, within which it changes into a chrysalis. In this state it remains till the beginning of May, when it bursts out a perfect Chafer. This is at first of a light green color, and very tender; but soon acquires its proper hardness and strength.

When the insect is touched it emits a fetid moisture, which, no doubt, is a mode of defence against the attacks of its enemies.

THE PILL CHAFER.

In its habits of life the Pill Chafer is one of the most remarkable of the Beetle tribe. It comes forth in April, and is to be seen abroad until about September, when it disappears. Its almost constant employment, in which it is indefatigable, is in the different operations necessary to continue its species. It constructs a proper nidus for its eggs, by forming round pellets of dung, in the middle of each of which it deposits an egg. These, in September, the insect conveys to the depth of about three feet into the ground. Here they remain till the approach of spring, when the grubs burst their shells, and find their way to the surface of the earth.

PILL CHAFER.

"I have attentively admired their industry, and their mutually assisting each other (says Catesby) in rolling these globular balls from the place where they made them, to that of their interment, which is usually at the distance of some yards, more or less. This they perform breach foremost, by raising their hind parts, and forcing along the ball with their hind feet. Two or three of them are sometimes engaged in trundling one ball, which from meeting with impediments, on account of the unevenness of the ground, is sometimes deserted by them. It is, however, attempted by others with success, unless it happen to roll into some deep hollow or chink, where they are constrained to leave it; but they continue their work by rolling off the next ball that comes in their way. None of them seem to know their own balls, but an equal care for the whole appears to affect all the community. They form these pellets while the dung remains moist; and leave them to harden in the sun before they attempt to roll them. In their moving of them from place to place, both they and the balls may frequently be seen tumbling about over the little eminences that are in their way. They are not, however, easily discouraged; and, by repeating their attempts, usually surmount the difficulties."

Catesby says also that these insects find out their subsistence by the excellence of their *noses*, which direct them in their flight to newly-fallen dung, on which they immediately go to work, tempering it with a proper mixture of earth. So intent are they always upon their employment, that, though handled or otherwise interrupted they are not to be deterred, but immediately on being freed persist in their work without any apprehension of danger.

They are so strong and active as to move about, with the greatest ease, things that are many times their own weight. Dr. Brickell was supping one evening in a planter's house of North Carolina, when two of these insects were conveyed, without his knowledge, under the candlesticks. A few blows were struck on the table, and to his great surprise the candlesticks began to move about apparently

without any agency; and his surprise was not much lessened, when, on taking one of them up, he discovered that it was only a Chafer that moved it.

OF THE LUCANUS, OR STAG-BEETLE TRIBE.

The antennæ of the Stag-beetles have a club-shaped extremity, divided into short, comb-like leaves. The jaws are toothed, and extend so far beyond the head, as to resemble horns. Under the lip there are two palpi or feelers, so thickly covered with hair, as to appear like tufts.

Stag-beetles are chiefly found in rotten and half-decayed wood, and under the bark of trees.

THE GREAT STAG-BEETLE.

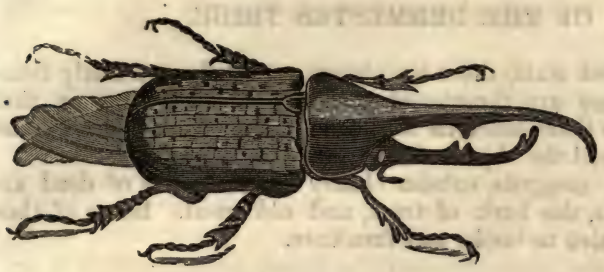
These insects are very common in oak and willow trees. In the stumps or about the branches of these they remain concealed during the day; flying abroad and feeding on the leaves only in the evening. The month of July is the time during which they are principally seen. The males, in particular, have great strength in their mandibles or jaws. With these they are able to pinch very severely. Linnæus informs us, that they feed on the liquor that oozes from the trunks or branches of trees; and it has been conjectured that the jaws are used either in obtaining their food, or in fixing themselves firmly to the spot while they eat. It is said that Stag-beetles may be kept alive for a considerable time, if supplied with the fresh leaves of oak or willow, or with sweetened water.

GREAT STAG-BEETLE.

GREAT STAG-BEETLE, WITH WINGS FOLDED.

In Germany there is a popular notion, that these insects are some-

times known, by means of their jaws, to carry burning coals into the houses; and that, in consequence of this, dreadful fires have been occasioned.



HERCULES BEETLE.

It is a singular circumstance respecting these insects, that I have frequently found several of their heads near together, and alive, while the trunks and abdomens were nowhere to be seen; sometimes only the abdomens were gone, and the heads and trunks were left. How this takes place, I never could discover. An intimate and intelligent friend of mine supposes, however, that it must have been in consequence of severe battles which at times take place among these, the fiercest of the insect tribes: but their mouths not seeming formed for animal food, he is at a loss to conjecture what becomes of the abdomens. They do not fly until most of the birds have retired to rest; and indeed, if we were to suppose that any of these devoured them, it would be difficult to say why the heads or trunks should alone be rejected.

RHINOCEROUS BEETLE.

The females deposit their eggs in decayed or worm-eaten trees. The larvæ, which are round and whitish, with rust-colored head and legs, are nourished under the bark. In this state they pass six years. When about to undergo their change into a chrysalis, each insect forms a hard and solid ball, of the form of an egg, and sometimes as large as the hand. When the perfect insect issues forth, it is at first quite soft. Its parts, however, soon harden, and in a little while it is able to fly away. The Hercules Beetle is a variety of the Stag Beetle. The Rhinoceros Beetle is so called from its horn resembling that of the Rhinoceros.

HERCULES BEETLE.

OF THE DERMESTES TRIBE.

In their perfect state, these insects are generally extremely timid. The moment they are threatened with danger, they stop in their course, draw up their antennæ and feet, and continue in a feigned state of death, until the object of their fear is removed.

The larvæ or maggots, subsist chiefly on the bodies of dead animals, dried skins, the bark of trees, and old wood. Some of them are very destructive to books and furniture.

THE BACON DERMESTES.

These insects are produced from maggots which are bred and nourished in bacon, or in other animal substance. To collections of dried and preserved animals, they are sometimes particulary injurious. They change their skins several times. These skins continue stretched out, as if blown up, and are in appearance like the little animals which cast them.

OF THE PTINUS, OR BORER TRIBE.

In a larva state, these insects are chiefly found in the trunks of decayed trees, and in old wood, where they make holes as round as though they had been formed with a gimlet. They are nearly allied to the Dermestes, but differ from those insects in the form of their antennæ, mandibles, and legs.

In the spring of the year, we see these insects issuing from wood where the *pupæ* have been enclosed; and, attracted by the rays of the sun, run along upon the window-frames, beams, or wainscot. Like the Dermestes, they feign themselves to be dead when touched; burying their head under the thorax, drawing in the legs, and concealing entirely their antennæ between the head and upper borders of the thorax, they present only the appearance of an inanimate substance.

The devastations which their larvæ commit are very great. Old moveables of wood, worm-eaten, and full of cylindrical holes, indicate, at the same time, the work and the habitations of these insects. By means of two strong and powerful jaws, they gnaw the wood on which they feed; and this, after passing through their bodies, is deposited in small grains of very fine powder, which fills up the holes behind them, as the little creatures pass onward. They increase their dwellings as they themselves increase in size; and when they have attained their full dimensions, they weave a nidus, of a kind of silk issuing from their body, in the bottom of their hole. In this they change to a pupa state, and afterwards to perfect insects.

There are numerous species. It will not be necessary for me to speak of more than one.

THE DEATH-WATCH PTINUS.

Notwithstanding its smallness, this creature is often the cause of serious alarm among the superstitious, from the noise which it makes, at a certain season of the year, resembling the ticking of a watch. From this it has its name; for, whenever this faculty is exerted, it is esteemed portentive of death to some one of the family in the house where it is heard. The philosopher and the naturalist may smile at a notion thus absurd; yet Sir Thomas Brown has remarked, with great earnestness, that the man, "who could eradicate this error from the minds of the people, would save from many a cold sweat the meticulous heads of nurses and grandmothers."

It is generally in the advanced state of spring, that these insects commence their noise. This is nothing more than a call or signal, by which they are mutually attracted to each other; and it may be considered as analogous to the call of birds. It is not occasioned by the voice, but by the insect's beating on any hard substance with the shield or fore-part of its head. The general number of successive distinct strokes, is from seven to nine or eleven. These are given in tolerably quick succession, and are repeated at uncertain intervals; and in old houses, where the insects are numerous, they may be heard during warm weather almost every hour in the day. The noise exactly resembles that made by beating with a nail upon the table.

This insect, from its obscure grayish brown color, nearly resembling that of decayed wood, is difficult to discover: it is consequently not always easy to say from what exact spot the sound proceeds. Mr. Stackhouse observed carefully the manner of its beating. He says, the insect raises itself on its hind legs, and, with the body somewhat inclined, beats its head with great force and agility against the place on which it stands. One of them, on a sedge-bottomed chair, exerted so much force, that its strokes were impressed and visible in the exterior coat of the sedge, for a space equal to that of a silver penny. Mr. Stackhouse took this insect and put it into a box. On the following day he opened the box, and set it in the sun. The insect seemed very brisk, and crept about with great activity on the bits of sedge and rotten wood, till at last, getting to the end of the pieces, it extended its wings, and was about to take flight. He then shut down the lid, when it withdrew them, and remained quiet. He kept it by him about a fortnight.

The idea of taming this little animal may appear absurd: it has, however, been so much familiarized, as to be made to beat occasionally. On taking it out of its confinement, and beating with the nail or the point of a pen on a table or board, it will answer the beats very readily, and will even continue to repeat its efforts as long as it is required.

Dr. Derham kept a male and female together in a box for about three weeks; and by imitating their noise, he made them beat when-

ever he pleased. At the end of this time one of them died; and soon afterwards the other gnawed its way out and escaped.

This insect, which is the real Death-watch of the vulgar, emphatically so called, must not be confounded with a wingless insect, not much unlike a louse, which makes a ticking noise like a watch, but which, instead of beating at intervals, continues its noise for a considerable length of time without intermission. The latter belongs to a tribe very different from this: it is the *Termes Pulsatorium* of Linnæus, and will be hereafter described.

OF THE SILPHÆ, OR CARRION BEETLES.

THESE insects are chiefly found, both in a perfect and larvæ state, in the half-decayed and putrid bodies of animals. Their antennæ are clavate, and the club is perfoliate. The elytra or wing-cases are margined; and the head is prominent. The thorax is somewhat flattened, and also margined.

THE BURYING SYLPH.

The best account that I have seen of the habits and economy of these interesting insects, is that written by M. Gleditsch, a well known writer on natural history. This gentleman had, at different times, observed, that Moles which had been left upon the ground after they had been killed, very unaccountably disappeared. He therefore was determined, if possible, to ascertain by experiment, what could be the cause of this singular occurrence.

On the twenty-fifth of May, he accordingly obtained a dead mole, which he placed on the moist, soft earth of his garden, and in two days he found it sunk to the depth of four fingers' breadth into the earth: it was in the same position in which he had placed it, and its grave corresponded exactly with the length and breadth of its body. The day following this grave was half filled up; and he cautiously drew out the mole, (which exhaled a horrible stench,) and found, directly under it, little holes, in which were four Beetles of the present species. Discovering at this time, nothing but these Beetles, he put them into the hollow, and they quickly hid themselves among the earth. He then replaced the mole as he found it, and, having spread a little soft earth over it, left it without looking at it again for the space of six days. On the twelfth of June he again took up the same carcass, which he found in the highest state of corruption, swarming with small, thick, whitish worms, that appeared to be the family of the Beetles. These circumstances induced him to suppose that it was the Beetles that had thus buried the mole, and that they had done this for the sake of lodging in it their offspring.

Mr. G. then took a glass vessel, and half filled it with moist earth: into this he put the four Beetles with their young-ones, and they im-

mediately concealed themselves. This glass, covered with a cloth, was placed on the open ground, and in the course of fifty days, the four Beetles interred the bodies of *four* frogs, *three* small birds, *two* grasshoppers, and *one* mole, besides the entrails of a fish, and two small pieces of the lungs of an Ox.

Of the mode in which they performed this very singular operation, the following is an account: A Linnet that had been dead six hours was placed in the middle of the cucurbit: in a few moments the Beetles quitted their holes, and traversed the body. After a few hours, one pair of the Beetles only was seen about the bird: the largest of these was suspected to be the female. They began their work by hollowing out the earth from under the bird. They arranged a cavity the size of the bird, by pushing all around the body the earth which they removed. To succeed in these efforts, they leaned themselves strongly upon their collars, and, bending down their heads, forced out the earth around the bird like a kind of rampart. The work being finished, and the bird having fallen into the hollow, they covered it, and thus closed the grave.

It appeared as if the bird moved alternately its head, its tail, its wings, or feet. Every time that any of these movements were observed, the efforts that the Beetles made to draw the body into the grave, which was now nearly completed, might be remarked: in effecting this, they jointly drew it by its feathers below. This operation lasted full two hours, when the smallest or male Beetle drove away the female from the grave, and would not allow her to return, forcing her to enter the hole as often as she attempted to come out of it.

This Beetle continued the work alone for at least five hours; and it was truly astonishing to observe the great quantity of earth which he removed in that time: but the surprise of Mr. G. was much augmented, when he saw the little animal stiffening its collar, and exerting all its strength, lift up the bird, make it change its place, turn, and, in some measure, arrange it in the grave that it had prepared; which was so spacious, and so far cleared, that he could perceive exactly under the bird, all the movements and all the actions of the Beetle.

From time to time, the Beetle coming out of its hole, mounted upon the bird, and appeared to tread it down; then, returning to the charge, it drew the bird more and more into the earth, till it was sunk to a considerable depth. The Beetle, in consequence of this uninterrupted labor, appeared to be tired: leaning its head upon the earth, it continued in that position nearly an hour, without motion; and it then retired completely underground.

Early in the morning the body was drawn entirely underground, to the depth of two fingers' breadth, in the same position that it had when laid on the earth; so that this little corpse seemed as if it were laid out on a bier, with a small mount or rampart all round, for the purpose of covering it. In the evening the bird was sunk about half a fingers' breadth deeper in the earth; and the operation was continued for nearly two days more, when the work obtained its final completion.

A single Beetle was put into the glass cucurbit, with the body of a

mole, and covered, as before, with a fine linen cloth. About seven o'clock in the morning, the Beetle had drawn the head of the mole below; and, in pushing the earth backward, had formed a tolerably high rampart around it. The interment was completed in this instance, by four o'clock in the afternoon, a space of time so short, that one could scarcely have imagined the operation possible, by so small a creature, without any assistance, and considering that the body of the mole must have exceeded the insect in bulk and weight at least thirty times.

While engaged in these experiments, a friend, who wished to dry a Toad in the shade, fixed it to a stick which he stuck into the ground. When it began to putrefy, the Beetles, allured by the smell, having loosened the end of the stick that was fixed in the earth, brought it to the ground, and they then interred both the Toad and the stick.

The interment of these animals, which generally takes place from about the middle of April to the end of October, has been sufficiently proved to be not merely for food, but as a proper nidus for the eggs of the insects, and to nourish the young family of grubs that proceeds from them. If they wanted them for food only, they would no doubt consume them above ground; but in the continuation of the species, it is necessary to have them below, since, otherwise, Foxes, Ravens, Kites, and other carnivorous animals, would seize on the bodies, and, along with them, would swallow the grubs of the Beetles.

OF THE COCCINELLA, OR LADY-BUG TRIBE.

THE principal food of these insects consists of aphides or plant-lice, by destroying which, in immense numbers, they render a most important service to mankind.

Their antennæ are club-shaped, and the club is solid. The thorax and elytra are margined. The body is hemispherical, and the abdomen flat. The larvæ or grubs of some of the species, have their bodies covered with scaly plates; others have hairs on the upper parts of the body, and on the sides; and there are others still different.

THE SEVEN-SPOTTED AND TWO-SPOTTED LADY-BUG.

Few insects are either more common or better known than these. They are usually found on plants, where they repose with the legs concealed under their body, and their antennæ beneath the head. In winter they hide themselves and become torpid, and they again appear abroad in the spring.

The females deposit their eggs on such plants as abound with aphides or plant-lice. The larvæ have each six feet, and a conical body divided into twelve rings. At the extremity of the posterior ring, there is a kind of fleshy teat, by which they are able to adhere to solid bodies. and firmly to support themselves while employed in seizing

and devouring their food. They are so extremely voracious, that when other food is scarce, they will sometimes eat even their own species.

In order to change into the *pupa* state, they attach themselves by their fleshy feet, to the leaves or branches of trees. Here they drop a small quantity of glutinous liquor, which fixes them to the spot, and, in a position contrary to that of the plane to which they adhere. Little by little their body contracts, and at the end of two or three days they undergo their transformation. In freeing themselves from their skin, they make it pass towards the hinder part of their body, where it continues like a little pellet.

The *pupæ* are beautifully spotted with black and other colors. The only motion observable in them, is that of alternately elevating and depressing their body, particularly if touched. They finally quit their envelope in about six days after this last change. When they first come into the world as perfect insects, their wing-cases are of a yellowish white color, soft and flexible. These soon harden by their contact with the external air; and shortly afterwards assume their proper spots and colors.

Lady Bugs have in France the name of *Bête à Dieu*, *Vache-à-Dieu*, and *Bête de la Vierge*.

OF THE CURCULIO, OR WEEVIL TRIBE.

THE *larvæ* of the Weevils, like those of other coleopterous insects, have each six legs and a scaly head. They have a resemblance to oblong soft worms. Some of them infest granaries, where, from their numbers and voracity, they often commit great ravages among the corn: some live in fruits, the insides of artichokes, thistles, and other plants; and others devour the leaves of trees and vegetables.

One division of the Weevils feed on trees and shrubs, inserting their beaks into the tender branches, and by this means extracting their juices. The *Curculio alliariæ* has been observed with its beak plunged into the twig of a crab-tree, as far as the place whence the antennæ arise. Another division feed solely on plants. Others live on grain, wood, and on some of the species of fungi; and a few under the surface of the earth.

THE CORN WEEVIL.

The Corn Weevil is well known to most farmers, from the devastation that it makes in their granaries. The parent insect lays its eggs in grains of corn, probably one in each grain. Here the larvæ, on being hatched, continue for some time to live, and it is very difficult to discover them, as they lie concealed within. They increase their size, and with it their dwelling, at the expense of the interior or

farinacious parts of the grain on which they feed. Corn-lofts are often laid waste by these grubs, whose numbers are sometimes so great, as to devour nearly the whole of their contents. When the grub has attained its full size, it still remains within the grain, hidden under the empty husk. There, being transformed, it becomes a chrysalis; and, when it has attained its perfect state, it forces its way out.

It is no easy matter to discover by the eye the grains that are thus attacked, for, in external appearance, they are still large and full. If, however, they be thrown into water, their lightness soon detects them.

To rid a granary of these destructive insects, it has been recommended to farmers to spread their corn in the sun, when the Weevils will creep out of their holes; and by often stirring the corn while in this situation, it is supposed they may be completely expelled. It is also said that they may be destroyed by strewing boughs of elder, or branches of henbane, among the corn. In a late Paris paper, a gentleman says, that about the month of June, when his granaries and barns, that had been much infested by Weevils, were all empty, he caused a number of the hills of the large ants to be collected in bags, and placed in different parts about them. The ants immediately attacked the Weevils that were on the walls and other parts, and destroyed them so completely, that in a very short time not a single Weevil was to be seen; and since that period, he says, they never appeared on his premises.

OF THE CERAMBIX, OR CAPRICORN TRIBE.

THE insects of the present tribe are among the most beautiful that are known. Their antennæ are frequently longer than the body. Many of the species diffuse a strong smell, perceptible at a great distance; and some of them, when seized, emit a sort of cry, produced by the friction of the thorax on the upper part of the abdomen and wing-cases.

Their *larvæ* are found in the inner parts of trees, through which they bore, feeding on and pulverizing the substance of the wood. They are transformed into perfect insects in the cavities they thus make, and never issue from their retreats till they have attained their perfect state.

OF THE LAMPYRIS, OR GLOW-WORM TRIBE.

THE name of this insect is derived from the luminous appearance of the posterior part of its abdomen. The males are all winged, but most of the females are destitute of wings. In some of the species the males are not luminous. The larvæ, which feed chiefly on plants and leaves, nearly resemble the females in appearance.

There are about sixty known species, inhabitants of different parts of the world.

THE COMMON GLOW-WORM.

During the summer season these insects are observed after sun-set in meadows, by road sides, and near bushes.

They are chiefly to be seen during the months of June and July. In the day-time they conceal themselves amongst the leaves of plants.

COMMON GLOW-WORM.

Each sex is luminous, but in the male the light is less brilliant than in the female, and is confined to four points, two of which are situated on each side of the two last rings of the abdomen. The utility of the bright light of the females is supposed to consist in attracting the attention of the males during the dark, when, only, they are able to render themselves conspicuous. They always become much more lucid when they put themselves in motion. This would seem to indicate that their light is owing to their respiration; in which process, it is probable, phosphoric acid is produced by the combination of oxygen gas with some part of the blood, and that a light is given out through their transparent bodies by this slow internal combustion. By contracting themselves, the insects have a power of entirely withdrawing it: when they are at rest, very little light is to be seen M. Templer, who made many observations on these insects, says that he never saw a Glow-worm exhibit its light at all, without some sensible motion either in its body or legs. This gentleman, when the light was most brilliant, fancied that it emitted a sensible heat.

If the insect be crushed, and the hands or face be rubbed with it, they contract a luminous appearance, similar to that produced from phosphorus. When a Glow-worm is put into a phial, and the phial is immersed in water, a very beautiful irradiation will be found to take place.

The female Glow-worms lay a great number of eggs on the turf or plants on which they live. These eggs are somewhat large for the size of the insects, of a round shape, and lemon color. When first deposited, they are covered with a yellow, viscous matter, which serves to fix them to the plant.

When full grown the larvæ are about an inch long, and so nearly resemble the female in appearance, that it is a difficult matter to distinguish the sexes. When they change to their *pupa* state, the skin generally splits on the middle of the head and back, and leaves an opening sufficient to give passage to the whole body.

As soon as the larvæ is completely disengaged from the skin, it curves its body into an arc, and is then in a *pupa* state. It still has much resemblance to the larva. The only indication of life now, is its curvature, from time to time, downwards, and its moving occasionally from side to side.

OF THE ELATER, OR SKIPPER TRIBE.

THE Elaters fly with great facility, and when thrown upon their backs, they are able to recover their position without using their feet: for this purpose the thorax terminates in a strong elastic spine, which is placed in a cavity of the abdomen. The insects, when upon their back, raise up the middle part of their body, so as to leave only the head and tail in contact with the plane on which they lie. The spine of the thorax is by this motion brought considerably out of its lodgment, and made to press against the side. Being from this position again slipped into its groove, with all the force the creatures are able to exert, the thorax and abdomen come together with so sudden a jerk, as to raise the body from the plane, and enable them to spring round.

SKIPPER.

The larvæ live and undergo their changes in the trunks of decayed trees.

OF THE DYTISCUS, OR WATER BEETLE TRIBE.

THE bodies of these insects are admirably formed for passing through the water with as little impediment as possible, being nearly boat-shaped, and on the surface perfectly smooth. They inhabit ponds and ditches, but occasionally fly in search of other waters. The males are distinguished from the females, by having a horny concave flap or shield on the forelegs. The hind legs in both sexes are peculiarly adapted for the aquatic residence of the insects, being furnished on the inner sides with a series of long and close-set filaments, so as somewhat to resemble fins. In the large species, the elytra or wing-cases of the males are smooth, aud those of the females furrowed.

The larvæ are extremely voracious, feeding on other aquatic insects, on worms, and even on young fish. They continue in this state about two years and a half; and when about to change into *pupæ*, they form a convenient cell, and secrete themselves for the purpose in the banks or amongst the weeds.

THE MARGINED WATER BEETLE.

Although water is the principal element in which these insects reside, they are perfectly amphibious. They may occasionally be found in all fresh waters; but are most frequently seen either in such as are stagnant, or where the stream is extremely low.

They are predatory and very voracious, devouring, in great numbers, not only other water-insects, but also those of the land. They seize their prey in their forelegs, and with these carry it to the mouth.

Although they are able to continue immersed for a great length of time, yet it is necessary for them to rise occasionally to the surface of the water, in order to breathe. They swim with great celerity; and, in flying, they make a humming or droning noise, like other Beetles.

WATER-BEETLE.

The larvæ have powerful jaws, and six long legs. At the posterior part of their body, which tapers towards the extremity, there are two small, slender processes, situated somewhat obliquely, and moveable at the base. It is by means of these that the larvæ suspends itself at the surface of the water, for the purpose of respiring the air of the atmosphere, which it does through two small cylindrical tubes, situated at the extremity of the tail.

When the larvæ change their place in the water, or seek to escape the attack of their enemies, they give a prompt and vermicular motion to their body, and strike the water forcibly with their tail. They are excessively voracious, subsisting chiefly on the larvæ of dragon-flies, ephmeræ, gnats and other insects. When the time of their transformation approaches, the larvæ quit the water, and enter the earth near the banks of the ponds or ditches which they frequent. Here they form a cavity in the form of an oval case, in which they undergo their change into *pupæ*, and afterwards into winged insects.

Thus these little creatures are aquatic animals in the larvæ state, become terrestrial under the form of *pupæ*, and amphibious when perfect insects.

OF THE CARABUS, OR GROUND BEETLE TRIBE.

THESE insects are very active and voracious, devouring the larvæ of the other tribes, and indeed all the smaller animals they can overcome. They conceal themselves under stones, or moss, and particularly under such as happen to be near the roots of old trees. Frequently, however, they are to be seen running about on the roads and fields. Some of the species are destitute of wings.

The larvæ are found chiefly in decayed wood, or under the ground, where they undergo their various changes.

THE BOMBARDIER, OR EXPLODING BEETLE.

This insect conceals itself among stones, and seems to make little use of its wings. When it moves it is by a sort of jump; and, when it is touched, we are surprised with a noise resembling the discharge of a musket in miniature, during which a blue smoke may

be seen to proceed from its extremity. The insect may at any time be made to play off its artillery, by scratching its back with a needle. If we may believe Rolander, who first made these observations, it can give twenty discharges successively. A bladder placed near its posterior extremity, is the arsenal that contains its store. This is its chief defence against its enemies; and the vapor or liquid that proceeds from it is of so pungent a nature, that if it happen to be discharged into the eyes, it makes them smart as though brandy had been thrown into them. The principal enemy of the Bombardier is another insect of the same tribe, but three or four times its size. When pursued and fatigued, the Bombardier has recourse to this stratagem: he lies down in the path of his enemy, who advances with open mouth to seize him: but, on the discharge of the artillery, the enemy suddenly draws back, and remains for awhile confused, during which the Bombardier conceals himself in some neighboring crevice; but, if not lucky enough to find one, the other returns to the attack, takes the insect by the head, and tears it off.

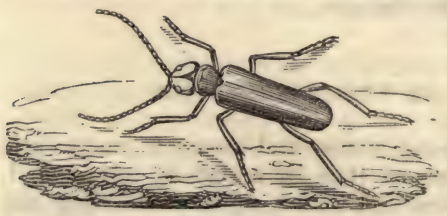
BOMBARDIER, WITH HEAD AND ANTENNA MAGNIFIED.

OF THE LYTTA TRIBE.

THE antennæ of the Lyttæ are of equal thickness throughout; the feelers are four in number, unequal in size, and the hind ones are clavate. The thorax is roundish: the head inflected and gibbous. The shells are soft, flexile, and as long as the abdomen.

THE BLISTERING LYTTA, OR SPANISH-FLY.

In the south of France, in Spain, and in Italy, these insects are found in great abundance about the time of the summer solstice. They feed on the leaves of trees and shrubs, particularly on those of the privet, lilac, woodbine, elder, poplar, and ash. On the last named trees they are sometimes seen in such swarms, as,



THE BLISTERING LYTTA.

in a little while to deprive them entirely of their verdure. They always prefer the young trees to old ones. When collected in great numbers their odor becomes very disagreeable, and is perceptible even to a considerable distance.

In order to collect these insects, a cloth is extended round the foot of the tree, and they are shaken upon it. They are then taken up, tied in a bag, and killed with the vapors of hot vinegar. After this they are dried in the sun, and placed in boxes for use. The fresher the insects are, the more stimulating is the action of their blistering properties. It is consequently necessary to collect them as shortly as possible after they have attained their perfect state.

OF THE FORFICULA, OR EARWIG TRIBE.

In this tribe the antennæ are bristle-shaped; and the feelers unequal and thread-shaped. The wing-cases are half the length of the abdomen, and have the wings folded up under them, somewhat in the manner of a fan. The tail is armed with a forceps.

The Earwigs undergo only a semi-metamorphosis, differing in external appearance very little in the three states

THE COMMON EARWIG.

It may not perhaps be generally known that the Earwig possesses wings which are both large and elegant, and that one of these, when extended, will cover nearly the whole insect. The elytra or wing-cases, are short, and extend not along the whole body, but only over the breast. The wings are concealed beneath these, and are somewhat of an oval shape. There is great elegance in the manner in which the insect folds them beneath its elytra. They are first closed up lengthways from a centre close to the body, like a fan; and afterwards refolded across in two different places, one about the middle of the membrane, and the other at the centre, from which the first folds proceeded. By this means the wing is reduced into a small compass, and proportioned to the size of the case under which it is to lie.

THE EARWIG.

It is a circumstance extremely singular, that, unlike those of most others of the insect tribe, the eggs are hatched and the young Earwigs are fostered by the parent. At the beginning of the month of June, M. de Geer found under a stone a female Earwig, accompanied by many little insects, which evidently appeared to be her own young. They continued close to her, and often placed themselves under her belly, as chickens do under a hen. He put the whole into

a box of fresh earth: they did not enter the earth, but it was pleasing to observe how they thrust themselves under the belly, and between the legs of the mother, who remained very quiet, and suffered them to continue there sometimes for an hour or two together. To feed them this gentleman gave them a piece of a very ripe apple: in an instant the old one ran upon it, and ate with a good appetite; the young-ones also seemed to eat a little, but apparently with much less relish.

The Earwig, though in its nature extremely harmless, except to fruits and vegetables in our gardens, has become a victim to human cruelty and caprice, originating in a notion that it introduces itself into the ears, and thence penetrates to the brain, and occasions death. It is to be wished that females, who but too commonly lay aside all ideas of tenderness at the very sight of it, would be convinced that the wax and membranes of the ears, are a sufficient defence against all the pretended attacks of the Earwig upon this organ.

Our gardeners have, it is true, some room for complaint. It lives among flowers and frequently destroys them; and, when fruit has been wounded by flies, the Earwigs also generally come in for a share. In the night they may occasionally be seen in amazing numbers upon lettuces and other esculent vegetables, committing those depredations that are often ascribed to snails or slugs. The best mode, therefore, of destroying them, seems to be, to attend the garden now and then in the night, and to seize them while they are feeding.

The bowl of a tobacco-pipe, and the claws of lobsters stuck upon sticks that support flowers, are the usual methods by which they are caught, as, in the day-time, they creep into holes and dark places. Placing hollow reeds behind the twigs of wall-trees, is also a good mode, if they be examined and cleared every morning. But at a midnight visit more may be done in an hour, than by any of the other means in a week.

HEMIPTEROUS INSECTS.

OF THE BLATTA, OR COCK-ROACH TRIBE.

SOME of the species of Blatta, are destitute both of wings and wing-cases. Their larvæ differ but little in their general appearance from the perfect insects. In a *pupa* state they have, between the thorax and the abdomen, two broad and flat rings, which cover much of the breast, and from which place the wings afterwards appear.

A few of these insects live in houses, and others conceal themselves in holes in the ground.

THE COMMON, AND THE AMERICAN COCK-ROACH.

Both these insects live in houses, where they are sometimes very troublesome, from their knawing and devouring eatables, leather, cloths, woolen, and other things to which they have access. The common species are extremely agile, and run very swiftly. During the day-time they conceal themselves in holes of walls and clefts of the floors, and issue forth only in the dark, for the purposes of plunder and devastation. The moment they perceive a light, they endeavor to escape into the places of their retreat. The smell of these insects is so powerful and unpleasant, that if they only run over provisions, they frequently render them very nauseous. They are furnished with wings, but their agility in other respects is so great, that they seldom use them.

The Kakkerlac, or American Cock-roach, is very common. In some parts of South America, particularly in Surinam, it causes great devastation in the houses, by gnawing the stuffs, cloths, and wool, and devouring and injuring the provisions.

It is asserted by Reaumur, that the American Cock-roaches have for an enemy a large species of Sphex. He says, that when one of these Spheges encounters a Cock-roach, it seizes it by the head, pierces it with its sting, and then carries it to its hole, the nidus, where, no doubt, it has deposited its egg, and where the Cock-roach serves as nourishment for the future young-one.

OF THE MANTIS TRIBE.

MANY of the insects of the present tribe have, at a little distance, so much the appearance of leaves of trees, that, in countries where they

are common, travellers have been struck with the singular phenomenon of what seemed to them animated vegetable substances. Their most prevailing color is a fine green, but many of them become brown after they are dead: some, however, are decorated with a variety of lively hues. The thorax in most of them is very long and narrow, and has the appearance of a footstalk to the large and rounded abdomen. Their manners also, in addition to their structure, are very likely to impose on the senses of the uninformed: they often remain on the trees for hours without motion: then suddenly rising, they spring into the air, and when they settle, they again appear lifeless. These seem to be stratagems, in order to deceive the cautious insects on which they feed.

THE ORATOR MANTIS.

This is a very widely-dispersed species, being found both in Europe, Asia, and Africa. From its perpetually resting on its hind legs, and erecting the fore paws close together, with a quick motion, as if in the action of praying, the country people, in various parts of the continent, consider it almost as sacred, and would not on any account injure it. "It is so divine a creature, (says the translator of Mouffet,) that if a child has lost its way, and inquires of the Mantis, it will point out the right path with its paw." Dr. Smith, however, informs us, in his tour on the continent, that, he received an account of this Mantis that seemed to savor little of divinity. A gentleman caught a male and female, and put them together in a glass vessel. The female, which in this, as in most other insects, is the largest, after a while devoured first the head and upper parts of her companion, and afterwards all the remainder of the body.

THE ORATOR MANTIS.

OF THE GRYLLUS, OR LOCUST TRIBE.

ALL these insects feed chiefly on vegetable substances. The *larvæ* and *crysalids* nearly resemble the perfect insects: they have six legs, are voracious and active, and reside principally in the ground.

Their heads are inflected, and armed with jaws that are furnished with foliform palpi, or feelers. The antennæ in some species are taper, in others thread-shaped. The wings are four, deflected and convolute: the lower ones plaited. The hind legs are formed for leaping; and on each side of the feet are two claws.

THE MOLE CRICKET.

This little creature, among the insect tribes, is a complete representative of the Mole. Its fore-feet are broad and strong, and in their formation and position bear a great resemblance to the fore-feet of that animal. They are used for precisely the same purpose of burrowing under the surface of the ground, where the insect commonly resides; and so expertly does it use them, that it can penetrate the earth with even greater expedition than the Mole.

The female of this species forms a cell of clammy earth, about the size of a hen's egg, closed up on every side, and as large in the interior as two hazel nuts. The eggs, amounting to nearly a hundred and fifty, are white, and about the size of caraway comfits; they are carefully covered, as well to defend them from the injuries of weather as from the attacks of a species of black Beetles, which often destroy them. The female places herself near the entrance of the nest, and whenever the Beetle attempts to seize its prey, the guardian insect catches it behind, and bites it asunder. Nothing can exceed the care of these animals in the preservation of their offspring. Wherever a nest is situated, fortifications, avenues, and entrenchments surround it: there are also numerous meanders which lead to it, and a ditch encompasses the whole, which few other insects are capable of passing.

Mole Crickets are troublesome insects in hot-beds, where they make great havoc, by hacking and gnawing the roots of plants with their fore-feet, the ends of which are armed with teeth like a saw.

THE HOUSE CRICKET.

These busy little insects reside altogether in our dwellings, and intrude themselves on our notice, whether we wish it or not. They are partial to houses newly built; for the softness of the mortar enables them without difficulty to form their retreats between the joints of the masonry, and immediately to open communications with the different rooms. They are particularly attached to kitchens and bakehouses, as affording them a constant warmth.

THE HOUSE CRICKET.

"Tender insects, that live abroad, (says Mr. White,) either enjoy only the short period of one summer, or else doze away the cold, uncomfortable months in profound slumbers; but these, residing as it were in a torrid zone, are always alert and merry: a good Christmas fire is to them, what the heats of the dog-days are to others.

"Though they are frequently heard by day, yet their natural time of motion is only in the night. As soon as it becomes dusk the chirping increases, and they come running forth, and are often to be seen in great numbers, from the size of a flea to that of their full stature.

"As one would suppose from the burning atmosphere which they inhabit, they are a thirsty race, and show a great propensity for liquids, being frequently found dead in pans of water, milk, broth, or the like. Whatever is moist they are fond of, and therefore they often gnaw holes in wet woolen stockings and aprons, that are hung to the fire. These Crickets are not only very thirsty but very voracious; for they will eat the scummings of pots, yeast, salt, and crumbs of bread; and kitchen offal or sweepings of almost every description.

"In the summer they have been observed to fly, when it became dusk, out of the windows, and over the neigboring roofs. This feat of activity accounts for the sudden manner in which they often leave their haunts, as it does also for the method by which they come to houses, where they were not known before. It is remarkable, that many sorts of insects seem never to use their wings, but when they wish to shift their quarters and settle new colonies. When in the air, they move in waves or curves, like woodpeckers, opening and shutting their wings at every stroke, and thus are always rising or sinking. When their numbers increase to a great degree, they become pests, flying into the candles, and dashing into people's faces. In families, at such times, they are, like Pharoah's plague of Frogs, 'in their bed-chambers, and upon their beds, and in their ovens, and in their kneading troughs.'

"Cats catch Hearth-crickets, and playing with them as they do with mice, devour them. Crickets may be destroyed like Wasps, by phials half filled with beer, or any liquid, and set in their haunts; for, being always eager to drink, they will crowd in till the bottles are full." A popular prejudice, however, frequently prevents any attempts at their destruction; many people imagining that their presence is attended with good luck, and that to kill or drive them away will bring some misfortune on the family.

When these insects are running about a room in the dark, if they be surprised by a candle, they give two or three shrill notes. These seem a signal to their fellows that they may escape to their crannies and lurking holes, for the purpose of avoiding danger.

The organ that produces this noise, is a membrane, which in contracting, by means of a muscle and tendon placed under the wings of the insect, folds down somewhat like a fan. This, as it is always dry, yields, by its motion, a sharp and piercing sound. The noise may even be heard after the insect is dead, if the tendon be made to move. We are told that Crickets will live, and even continue their accustomed noise, for some time after their heads are cut off.

THE FIELD CRICKET.

Towards sun-set is the time when the Field Crickets begin to appear out of their subterraneous habitations. They are, however, so shy and cautious, that it is no easy matter to get a sight of them; for feeling a person's footsteps as he advances, they stop short in the

midst of their song, and retire backward nimbly into their burrows, where they lurk till all suspicion of danger is over.

It is remarkable, that, though these insects are furnished with long legs behind, and brawny thighs adapted for leaping, yet, when driven from their holes, they show no activity, but crawl along in so lifeless a manner as easily to be caught. And though they are provided with a curious apparatus of wings, yet they never exert them, even when there seems to be the greatest occasion. The males only make their shrill noise, perhaps out of rivalry and emulation; as is the case with many animals, which exert some sprightly note during their breeding-time.

THE MIGRATORY LOCUST.

Syria, Egypt, Persia, and almost all the south of Asia, are subject to a calamity as dreadful as volcanoes and earthquakes are to other countries, in being ravaged by those clouds of Locusts, so often mentioned by travellers. The quantity of these insects is incredible to all, who have not themselves witnessed their astonishing numbers: the whole earth is covered with them, for the space of several leagues. The noise they make in browsing on the trees and herbage, may be heard at a great distance, and somewhat resembles that of an army foraging in secret. The Tartars themselves are a less destructive enemy than these animals. One would imagine, wherever they have been seen, that fire had followed their progress. Wherever their myriads spread, the verdure of the country disappears, as if a curtain had been removed: trees and plants are stripped of their leaves, and are reduced to their naked boughs and stems; so that the dreary image of winter succeeds, almost in an instant, to the rich scenery of the spring. When these clouds of Locusts take their flight, the heavens may sometimes literally be said to be obscured by them. Happily this calamity is not frequently repeated; for it is the inevitable forerunner of famine. The inhabitants of Syria have remarked, that Locusts are always increased by too mild winters, and that they contantly come from the desert of Arabia. From this observation it is easy to conceive, that, the cold not having been rigorous enough to destroy their eggs, they multiply suddenly; and, the herbage failing them in the immense plains of the desert, innumerable legions issue forth. When they make their first appearance on the frontiers of the cultivated country, the inhabitants attempt to drive them off, by raising large clouds of smoke; but frequently their herbs and wet straw fail them. They then dig trenches, where numbers of the insects are buried: but the most efficacious destroyers are the south and south-easterly winds, and the Locust-eating Thrushes. These birds follow them in numerous flocks like Starlings, and not only greedily devour

THE MIGRATORY LOCUST.

them, but kill as many as they can: accordingly they are much respected by the peasants, and nobody is allowed to shoot them. As to the southerly and south-easterly winds, they drive with violence these clouds of Locusts over the Mediterranean, where such quantities of them are sometimes drowned, that, when their bodies are thrown on the shore, they infect the air for several days, even to a great distance.

The female Locust when she lays her eggs, which are generally about forty in number, retires to some solitary place underground. Here, by her sagacity, she secures them from the intemperance of the air, as well as from the more immediate danger of the plough or fatal spade, one blow of which would destroy all the hopes of a rising generation.

OF THE LANTERN-FLIES IN GENERAL.

In this tribe the head is extended forward, and is hollow and inflated. The antennæ, consisting of two joints, the outer one of which is globular, are seated below the eyes. The rostrum or beak is four-jointed, and inflected, or bent inwards under the body. The legs are not formed for leaping.

THE GREAT LANTERN-FLY.

This is the most vivid of all the luminous insects. It affords a light so great, that travellers, walking by night, are said to be enabled to pursue their journey with sufficient certainty, if they tie one or two of them to a stick, and carry this before them in the manner of a torch. This insect is common in many parts of South America.

THE GREAT LANTERN-FLY.

The light emitted by this fly, proceeds entirely from the hollow part or lantern, of the head; no other part being luminous. Its most essential use is, no doubt, as in the other luminous tribes, to point out the sexes to each other, serving in them the same purpose, in this respect, as the voice in larger animals.

OF THE CICADÆ IN GENERAL.

THESE insects are found in various parts both of the New and Old Continent, where they subsist almost wholly on the leaves of trees and on other vegetable substances. They are furnished with a hard and horny proboscis or tube, in which is contained a very slender sucking-pipe. The former is not much unlike a gimlet in form, and is used by them in boring through the bark of trees, for the purpose of extracting their juices. With this proboscis they also bore holes in the small and tender twigs of the exterior branches, in which they deposit their eggs, sometimes to the amount of six or seven hundred. Each cell does not contain more than from twelve to twenty, so that by this means they often do much damage to the trees which they frequent.

THE CICADA, OR GRASSHOPPER.

The *chrysalids* of these insects are not torpid, like those of many others; but have six legs, and differ from the parent, in having only the rudiments of wings. They are exceedingly active, and in general run and leap about upon the trees with great sprightliness.

The Cicadæ of the hottest climates make the loudest noise. From the papers of Mr. Smeathman, who resided a considerable time in Africa, it appears that some are so loud, as to be heard to the distance of half a mile; and that the singing of one of them in a room, will immediately silence a whole company. Professor Thunburg says, that one of the Javanese species makes a noise as shrill and piercing, as if it proceeded from a trumpet.

THE AMERICAN LOCUST.

This species of Cicada is at all times common in Pennsylvania, but at certain periods (generally of fourteen or fifteen years) the numbers are so immense, that it has obtained the general appellation of Locust.

Towards the end of April these insects emerge from the ground, and their appearance is always to be predicted by the swine searching for them. The swarms are sometimes so great, that in the places from which they have arisen, the earth appears nearly as full of holes as a honey-comb. They always leave the ground during the night. On their first coming out they are in the chrysalid state: but soon afterwards, the back bursts, and the flying insects disengage themselves from their case. For a little while they are entirely white, with red eyes, and seem very weak and tender; but, by the next day, they

attain their full strength and perfection, being of a dark brown color, with four finely variegated transparent wings.

Shortly after they have attained their perfect state, these insects always spread themselves over the country for many miles round. They are excessively voracious, and do infinite damage, in their periodical swarmings, to both orchard and forest trees: and were it not for the number and variety of their enemies, and the naturally short duration of their lives, the inhabitants would often suffer from them all the horrors of famine.

OF THE CIMECES, OR BUGS IN GENERAL.

THE rostrum or beak of the Cimeces or Bugs is inflected; and the antennæ are longer than the thorax. These insects have four wings, folded cross-wise, the upper ones coriaceous on the upper part. The back is flat, and the legs are formed for running.

The *larvæ* differ from the perfect insects in little else than the want of wings. Many of them infest plants, on which they live, and on which they lay their eggs. Several of the species are voracious, and spare scarcely any other insects that they can conquer. They glut themselves with the blood of animals; destroy caterpillars, flies, and even beetles, the hardness of whose elytra would seem to be proof against all their attacks; the incautious naturalist may also himself sometimes experience the severity of their nature.

THE BED-BUG.

The Bed-bug, which is a nauseous and troublesome inhabitant of most of the houses in large towns, is singular in having neither wings nor wing-cases. It runs about with considerable activity in the night, to suck the blood of persons that are asleep, hiding itself by day in crevices and other retired places.

Their most favorite food is blood, dried paste, size, deal, beech, osier, and some other kinds of timber, the sap of which they suck; and on any of these they are able to exist. They will not feed on oak, walnut, cedar, or mahogany; for several pairs, which, for the sake of experiment, were confined with these kinds of wood, soon died, whilst those kept with the others continued to live through the whole year.

The female generally lays about fifty eggs at a time. These are white, and, when protruded, are covered with a viscous matter, which, afterwards hardening, sticks them firmly to the place where they are deposited. These eggs are usually hatched in about three weeks. The general times of laying are March, May, July, and September: so that from every female Bug that out-lives the season, as many as two hundred young-ones may be produced. Thus is the excessive increase of these nauseous animals to be accounted for, where proper care is not taken to destroy them.

The young-ones, for sometime after they first escape from the egg, are perfectly white, but they generally become brown in the course of about three weeks. In eleven weeks they are at full growth. They are then very watchful and cunning creatures; and so fierce, among their own species, that they will sometimes contend with the utmost fury; and in their combats they seldom leave off till either one or both of the animals are killed. Spiders are very fond of them for food.

In order to clear a house of Bugs, the leading point is cleanliness in every respect; for this is their greatest annoyance, and by this alone their increase is to be checked. The first young-ones begin to burst from the eggs early in spring, frequently even in February. At this season it is, that the greatest attention is required. The bed infested by them, ought to be stripped of all its furniture, which should be washed: if linen, it should be boiled; and if stuff, it should be hotpressed. The bedstead should be taken in pieces, dusted, and washed with spirit of wine, or corrosive sublimate, in all the joints and crevices; for it is in these parts, principally, that the females deposit their eggs. This done, all the cavities should be well filled with the best soft soap, mixed up with verdigrease and Scotch snuff. On this composition the young will immediately feed after leaving the egg, (if any escape the cleansing,) and will be destroyed, as will also such of the old ones as happen to be left.

Bugs abound in the countries of nearly all hot climates, whence most of our merchant-vessels are over-run with them. This accounts for their extreme numbers in all the seaport cities and towns, being conveyed thither in clothes, packages, &c. Hence appears the great necessity of examining carefully every thing brought from such vessels into the houses.

Deal and beech boards should be removed, as should also every thing that is fixed to a bed by means of paste, as these afford them both shelter and food. Oak and mahogany are probably the best kinds of wood to use, as the closeness of their texture allows the animals but an uncomfortable situation.

It is supposed that Bugs do not altogether lie torpid during the winter, but that in the cold weather they require less nutriment; and therefore that they are not tempted to come so often out of their retreats, as they do in the warmer seasons of the year.

OF THE APHIDES, OR PLANT-LICE.

The minute animals which compose this singular tribe, live entirely on vegetables, and the loftiest tree is as liable to their attacks as the most humble plant. Their numbers are often incalculably great. They prefer the young shoots, on account of their tenderness, and frequently insinuate themselves into the very hearts of the plants, doing irreparable mischief even before they are discovered. But, for the most part, they beset the foliage, and are always found on the underside of the leaf. This they prefer, not only on account of its being the most

tender part, but because it affords them protection from the weather, and from various injuries to which they would otherwise be exposed. Sometimes, though rarely, the root is the object of their choice; and the roots of lettuces have been observed so thickly beset with one of the species, that a whole crop has been rendered sickly and of little value. They are rarely to be found on the bark of trees.

The Aphides afford another surprising deviation from the general laws of nature; one impregnation of the female is sufficient for nine generations.

THE APHIS OF THE ROSE-TREE.

This insect, which is well known by the name of *Rose Louse*, is generally of a green color, with the tip of the antennæ and horns black. The tail is pointed, and without a style.

Towards the beginning of February, if the weather be sufficiently warm to make the buds of the rose-tree swell and appear green, this species of Aphis will be found on them in considerable abundance. They are produced from small, black, oval eggs, which were deposited in autumn on the last year's shoots. If, after their appearance, the season become cold, almost the whole of them suffer, and the trees, for that year, are in a great measure freed from them.

Those that withstand the severity of the weather, seldom arrive at their full growth before April, when, after twice casting their skins, they begin to breed. It then appears that they are *all females;* each of them produces a numerous progeny, and that without any intercourse with a male insect.

If the Aphides had not many enemies, their increase in summer would sometimes be destructively great.

After a mild spring, most of the species of Aphis become so numerous as to do considerable injury to the plants on which they are found. The best mode of remedying this evil, is to lop off the infected shoots before the insects are greatly multiplied, repeating the same operation before the time that the eggs are deposited. By the first pruning, a very numerous present increase will be prevented; and by the second, the following year's supply may, in a great measure, be cut off.

OF THE COCCUS, OR COCHINEAL INSECTS.

THESE are an extremely fertile race, and many of them are very troublesome in stores and green-houses. The females fix themselves, and adhere almost immovably, to the roots, and sometimes to the branches, of plants. Some of them, having thus fixed themselves, lose entirely the form and appearance of insects: their bodies swell, their skin stretches and becomes smooth, and they so much resemble some of the galls or excrescences, found on plants, as by inexperienced persons to be mistaken for such. After this change, the abdomen

serves only as a kind of shell or covering, under which the eggs are concealed. Others, though they are likewise thus fixed, preserve the form of insects, till they have laid their eggs and perish. A kind of down or cotton grows on their belly, which serves for the formation of the nest, in which they deposit their eggs.

The males are very different in their appearance from the females. They are furnished with wings, and are small but active insects.

Most of the species of Coccus, which infect our green-houses and conservatories, have been brought over, with exotic plants, from other climates.

THE LAC COCHINEAL.

Around the edges of their body they are environed with a sub-pellucid gelatinous liquid, which seems to glue them to the branch. The gradual accumulation of this liquid at length forms a complete cell for the insect. The insect is now, in appearance, an oval, smooth, red bag, without life, about the size of a small American Cochineal insect, emarginated at the obtuse end, and full of a beautifully red liquid.

These insects, which in the East Indies have the name of Gum Lac, are principally found on the trees of the uncultivated mountains on both sides of the Ganges, where nature has been so bountiful, that, were the consumption many times greater than it now is, the markets would be fully suppled. The only trouble is in breaking down the branches and carrying them to market.

Stick Lac is the natural state of this production. When the cells are separated from the sticks, broken into small pieces, and appear in a granulated form, they are called Seed Lac. This, liquified by fire and formed into cakes, is Lump Lac. When the cells are liquified, strained, and formed into thin, transparent laminæ, the substance has the name of Shell Lac.

Of Shell Lac the natives of Eastern countries make ornamental rings, to decorate the arms of females. They also form it into beads, necklaces, and other female ornaments. This substance was formerly used in medicine, but it is now confined principally to the making of sealing-wax, and to japanning, painting, and dyeing

THE AMERICAN COCHINEAL.

This Cochineal, so useful to painters and dyers, is a native of South America, where it is found on several species of Cactus, particularly the *Cactus Opuntia* or Prickly Pear-tree. In Jamaica these insects are also now tolerably common, but they are generally understood to have been introduced from America. The heavy rains, however, to which the West India islands are subject, often render the industry of the natives in breeding and rearing them entirely fruitless.

LEPIDOPTEROUS INSECTS.

THE present order contains only three tribes; the Butterflies, Sphinges and Moths. These are all produced from caterpillars, by a change that is common to all the insect species. The caterpillars proceed from eggs; and the eggs of Butterflies are sometimes so numerous, that, in the spring of the year, the leaves and tenderest stems of plants are nearly covered with them.

Caterpillars are, in general, extremely voracious. Some of them eat more than double their own weight in a day, and this without suffering any inconvenience; for the digestive powers of all animals are proportioned not so much to their size, as to the duration of their lives.

They often change their skin without much altering their shape, till at last they assume a shape very different from that which they before possessed. They have now the name of *Aurelia* or *Chrysalis;* and in this state all the parts of their future form are visible, but under a thick shell: and these are so very soft and delicate, that the least touch discomposes them.

The production and manners of these animals, afford subject both of amusement and instruction.

About the middle of summer a butterfly deposits from three to four hundred eggs on the leaf of a tree; from each of these, in a few days, a young caterpillar proceeds. The eggs of one of the species are no sooner hatched, than the young-ones begin to form a common habitation. They spin silken threads, which they attach to one edge of the leaf and extend to the other. By this operation they make the two edges of the leaf approach each other, and form a cavity resembling a hammock. In a short time the concave leaf is completely roofed with a covering of silk. Under this tent the animals live together.

About the beginning of October, or when the frost commences, the whole community shut themselves up in the nest. During the winter they remain immovable, and seemingly dead; but, when exposed to heat, they soon discover symptoms of life, and begin to creep. They seldom go out of the nest till the middle or end of April. When they shut themselves up for the winter, they are very small; but, after they have fed for some days in spring, upon the young and tender leaves, they find the nest itself, and all the entrances to it, too small for the increased size of their bodies. To remedy this inconvenience, these creatures know how to enlarge both the nest and its passages, by additional operations accommodated to their present state. Into these new lodgings they retire, in order to screen themselves from the injuries of the weather, or to cast their skins. In fine, after having cast their skins several times, the period of their dispersion arrives.

From the beginning to nearly the end of June, they lead a solitary life. Their social disposition is no longer felt. Each of them spins a pod of coarse brownish silk. In a few days they are changed into chrysalids, and in eighteen or twenty days more they are transformed into butterflies.

OF THE BUTTERFLIES IN GENERAL.

THE antennæ of these insects are thicker towards the tip than in any other part, and generally end in a knob. The wings, when at rest, are erect, the upper edges meeting together over the body. They are all diurnal animals.

These elegant insects feed on the nectar of flowers, and on the moisture which exudes from plants and trees, which they extract by means of their long proboscis or tongue. Their *caterpillars* are sometimes smooth, and sometimes thickly covered with hair; and their *chrysalids* are naked, and attached, apparently in a lifeless state, to trees, or other substances, by filaments proceeding either from the tip or the midle of their bodies.

THE CHRYSALIDS OF BUTTERFLIES.

THE LARGE WHITE BUTTERFLY.

This is a common species, and, in its caterpillar state, is often very destructive to our cabbage and cauliflower plants. The caterpillars seem almost confined to these vegetables, on which they are generally to be found in great numbers from June to October. The Butterflies first appear on wing in the middle of May, and, about the end of the same month, they lay their eggs in clusters on the under sides of cabbage-leaves. In a few days the caterpillars come forth, and continue to feed together till the end of June, when they are at their full growth. They then traverse about in search of some convenient place to fix themselves, where, after their change, the chrysalids may be sheltered. When such are found, they each fasten their tail by a web, and carry a strong thread of the same round

THE LARGE WHITE BUTTERFLY.

their body near the head; and thus firmly secured, they hang a few hours, when the chrysalis becomes perfectly formed, and divested of the caterpillar's skin. In fourteen days after this, the Butterfly is produced. The caterpillars of this latter brood attain their growth, and change to chrysalids in September, in which state they remain through the winter, till the beginning of the following May. During this time we often see them hanging under the copings of garden walls, under pales, and in other places, where they can have tolerable shelter from the inclemency of the weather.

The most effectual way of clearing cabbage and cauliflower plants of caterpillers, is to send children into the gardens, to pick them off and destroy them. This may seem a troublesome and expensive mode; but it has been found to answer, even to the extent of clearing many acres of field cabbages.

THE PURPLE EMPEROR.

The wings are indented and of a rich brown color, with a blue gloss, and have a whitish interrupted band on each side. On the upper part of the under wing there is an eye-like spot.

This is the most beautiful and most interesting of all the British butterflies. In its manners, as well as in the varying lustre of its purple plumes, it possesses the strongest claim to our attention.

It makes its appearance about the month of July, fixes its residence upon the summit of some lofty oak, from the utmost sprigs of which, in sunny days, it performs its aërial excursions. "In these," continues this writer, "he ascends to a much greater elevation than any insect I have ever seen; sometimes mounting even higher than the eye can follow, especially if he happen to quarrel with *another Emperor*, the monarch of some neighboring oak. These insects never meet without a battle, flying upward all the while, and combating furiously with each other: after which they frequently return to the identical sprigs from which they each ascended.

The caterpillar is green, with oblique white lines. It is rough on the upper part of the body; and on the head there are two spines. It feeds on the oak. The chrysalis is green, has two horns, and is somewhat compressed.

THE PEACOCK BUTTERFLY.

The caterpillars of this butterfly are produced from eggs, which have been deposited in the spring of the year on the nettle. They live in society, and are to be found, throughout the early part of the summer, feeding on this plant. They are black, and their bodies are covered with spines, and marked with numerous small white specks.

THE PEACOCK BUTTERFLY.

Shortly after the little animals first see the

light, they begin to spin for themselves a large and commodious web, into which they flee for shelter during rainy weather, and in the night; and under the protection of which they change their skins.

When they have attained their full growth, they seek out some proper place where they can safely take their chrysalid form. In doing this they suspend themselves vertically, with the head downward; and the chrysalis, thus suspended, continues for about twenty days, about the end of which time the insect becomes perfected, breaks out from its shell and flies away.

THE MARSH FRITILLARY.

The Marsh Fritillary is a small butterfly, not measuring more than an inch and a half across the broadest part of its expanded wings. Its color is a brownish orange, variegated with yellow and black, in a small pattern. The under sides of the wings are lighter, and chiefly orange and yellow.

THE MARSH FRITILLARY.

The caterpillars of this insect are to be seen, in some particular situations, in September, in great abundance. As they increase in size, they go abroad in search of food; but their local attachment is very remarkable, for neither the caterpillar, nor even the butterfly will stray far from the place where it was bred. Numbers of the latter may sometimes be observed on wing, in a small spot of swampy or marsh land, when not one of them is to be met with in any of the adjacent places. As they fly very low, and frequently settle, the naturalist has no difficulty in catching them. The caterpillars are generally at their full growth about the last week in April. They now suspend themselves by the tail to change into chrysalids, and in this state they remain about fourteen days. Their mode of suspension is a singular instance of the extraordinary power of instinct. They first draw two or three small blades of grass across towards their top, and fasten them together by means of their silk; then hang themselves beneath the centre of these, each having his own little canopy. By this means they are not only hidden from the sight of birds, but in a great measure defended from the injury, which they might otherwise sustain from windy and boisterous weather.

OF THE SPHINGES, OR HAWKMOTHS.

The bodies of these insects are usually thick and heavy, and their wings long and admirably calculated for rapid flight. Some of them are among the largest of the Lepidopterous Insects. They fly for the most part, early in the morning, and late in the evening. They hover

over flowers, and, without settling upon them, suck out the nectarious juices by means of their long and spiral tongue.

Their caterpillars are large, smooth, and without hairs, and furnished with a single erect horn near their posterior extremity. The greater number of the species change into chrysalids under the surface of the ground.

THE DEATH'S HEAD HAWKMOTH.

The name of this moth has been obtained from its having upon the thorax somewhat the appearance of a human skull. It is the largest of all the British species, the wings of the females measuring sometimes more than five inches in extent.

THE DEATH'S HEAD HAWKMOTH.

When taken into the hand, this moth makes a singular kind of noise, by striking its palpi against the tongue. This, by some persons has been compared to the plaintive squeaking of a mouse.

Several persons have attempted to feed the caterpillars, for the purpose of obtaining specimens of the insect in its perfect state. But although they have diligently attended to them, and the insects have completed their transformation into chrysalids, I have not yet heard of any one, who was able to rear them up to the winged state. I have myself made numerous attempts, but have invariably failed.

THE DEATH'S HEAD MOTH.

OF THE MOTHS IN GENERAL.

THE Moths are only to be seen flying abroad in the evening and during the night, which are their times of feeding. The larvæ or *caterpillars* are in general smooth, and more or less cylindrical: they are active creatures, and prey with great voracity on the leaves of plants. Their *chrysalids* are either concealed in the ground, or protected from the inclemency of the weather by a silky covering, spun by the larvæ around their bodies. In this state they are either simple, or have a kind of hook at their extremity.

THE SILKWORM.

The Silkworm is found, in a native state, on mulberry-trees, in China and some other eastern countries, whence in the reign of the emperor Justinian, it was originally introduced into Europe. It is, however, at this time become, in a commercial view, one of the most valuable of all insects; affording those delicate and beautiful threads, that are afterwards woven into silk and manufactured into garments in almost all parts of the world.

THE SILKWORM, EGGS AND SILK.

In the warmer climates of the east, the Silkworms are left at liberty upon the trees; where they are hatched, and on which they form their cocoons: but in cooler countries, where these animals have been introduced, they are kept in a room with a south aspect, built for the purpose, and are fed every day with fresh leaves.

The eggs are of a straw-color, and each about the size of a pin's head. At its birth the larva or worm is entirely black, and about as long as a small ant; and it retains this color eight or nine days. The worms are put on wicker shelves, covered first with paper, and on this with a bed of the most tender of the mulberry-leaves. Several ranges are placed in the same chamber, one above another, about a foot and a half apart. The scaffolding for these ranges should, however, be in the middle of the room, and the shelves not too deep. The worm continues feeding during eight days after its birth, when it becomes about the fourth of an inch in length: it then experiences a kind of lethargic sleep for three days, during which it casts its skin. It now feeds for about five days, and is considerably increased in size, when a second sickness comes on. In the next ten days it experiences two other attacks; by which time it has attained its full growth, and is somewhat more than an inch in length, and two lines in thickness. It then feeds during five days, with a most voracious appetite; after which it refuses food, becomes transparent, with a tinge of yellow, and leaves its silky traces on the leaves that it passes over. These signs denote that it is ready to begin the cocoon, in which it is to undergo its change into a chrysalis. The animals are then furnished with little bushes of heath or broom, stuck upright between the shelves; they climb up the twigs, where, after a little while, they begin the foundation of their lodge, and are five days in spinning the cocoon. They generally remain in this state about forty-seven days.

The exterior of the cocoon is composed of a kind of rough cotton-like substance, called floss; within this the thread is more distinct and even; and next to the body of the aurelia, the apartment seems lined with a substance of the hardness of paper, but of a much stronger consistence. The thread which composes the cocoon, is not rolled regularly round, but lies upon it in a very irregular manner, and winds off first from one side, and then from the other.

COCOONS.

In the course of six or seven days, all the cocoons are generally formed: they are then taken from places where they had been deposited, and divided into classes. The best are strong, and of a pure, unspotted color. Some are white, and others yellow. The good ones are firm and sound, of a fine grain, and have both ends round and strong. Those of a bright yellow yield more silk than the others.

a. & b. BUTTERFLIES. c. THE EGGS. d. THE PUPA. e. SILKWORM.

But the pale ones are preferred, because they take certain colors better, and because, since they contain less gum than the others, they lose less than those in boiling.

Five or six days after the cocoon has been detached, the birth of the moth is prevented, as the insect would otherwise pierce the shell, and thereby render the cocoon useless. To prevent this, the cocoons are put into long, shallow baskets, covered up, and baked for about an hour, in a heat equal to that of an oven from which the bread is just drawn.

After the baking, they are disposed in a proper manner on osier shelves, distributed into stories, two or three feet distant from each other.

The whole thread, if measured, will be found about three hundred

yards long; and it is so fine, that eight or ten threads are generally rolled off into one. For this purpose the cocoons are put into small coppers or basins of water, each over a small fire. The ends of the threads are found by brushing them over gently with a whisk made for the purpose; and in the winding they are each passed through a hole, in an horizontal bar of iron placed at the edge of the basin, which prevents them from becoming entangled.

SILKWORM ON A MULBERRY LEAF.

A fortnight or three weeks generally elapse before the insect within the cocoon is changed into a moth; but no sooner is it completely formed, than, having divested itself of its aurelia skin, it prepares to burst through its prison. For this purpose it extends its head towards the point of the cocoon, and gnaws a passage through its cell, small at first, but enlarging as the animal increases its efforts for emancipation. The tattered remnants of its aurelia skin are left in confusion within the cocoon, like a little bundle of dirty linen.

The animal thus set free, appears exhausted with fatigue, and seems produced for no other purpose than to transmit a future brood. The male dies immediately after its conjunction with the female; and she only survives him, till she has laid her eggs, which are to be hatched into worms in the ensuing spring.

In many parts of Italy, the inhabitants contrive to have two silk-harvests in the year. They keep the eggs in very cool places; and, when the mulberry-trees (after having been stripped entirely of their leaves for former worms) begin to bud a second time, they expose the eggs to be hatched.

During the whole time in which the animals continue in a worm state, the utmost care and attention are requisite, as they are extremely susceptible of cold, dampness, and unpleasant smells.

THE CLOTHES MOTH.

The larva of this little Moth is well known from the damage it commits in woolen cloth and furs. These substances constitute the principal support of the caterpillar, and therefore the parent is, by its natural instinct, directed to deposit its eggs in them. The caterpillar, as soon as it quits the egg, begins to form for itself a nest: for this purpose, after having spun a fine coating of silk immediately around its body, it cuts the filaments, of the wool or fur, close to the thread of the cloth, or to the skin. This operation is performed by its jaws, which act in the manner of scissors. The pieces are cut into convenient lengths, and applied, with great dexterity, one by one, to the outside of its case; and to this it fastens them by means of its silk. Its covering being thus formed, the little caterpillar never quits it but

in the most urgent necessity. When it wants to feed, it puts out its head at either end of its case, as bests suits its convenience. When it wishes to change its place, it puts out its head, and its six fore-legs, by means of which it moves forward, taking care first to fix its hind legs into the inside of the case, so as to drag it along.

It lives in this manner, until by the augmentation of its size, its case becomes too small for the body. When this is felt, it begins by making a small addition to one end; then, turning itself within the case, which, in the middle, is always wide enough for that purpose, it makes a little addition to the other end, so as still to preserve the widest part exactly in the middle; and in a similar manner it makes every successive addition.

The progress of its operations may be easily remarked, by transferring it from cloth of one color to that of another. In this case every fresh addition will become conspicuous, by forming a small ring of their respective colors at each end, as they are used.

When the case wants widening, the insect, with its scissor-like teeth, begins by making a slit lengthways, from the centre to one of the extremities. This opening it instantly fills up with a thin stripe of wool externally, and silk internally, in the same manner as in the other parts. It afterwards, at a little distance from this, makes another slit at the same end, which it also fills up; then turning itself within, it repeats the same process from the centre to the other end.

After having changed within its case into a chrysalis, it issues, in about three weeks, a small winged nocturnal Moth, of silvery-gray color, well known to almost every mistress of a family.

It may be useful to point out the best modes of preventing the havoc, which these insects commit in our wardrobes and furniture. The smell of oil of turpentine is instantaneous death to them; if, therefore, the goods affected by them be put into a close place, along with a saucer or other open vessel containing oil of turpentine, the warm air raising the vapor will immediately destroy them. Sometimes, if the caterpillars be old and strong, it may be necessary to brush the clothes with a brush, the points of which have been dipped in the turpentine. The smoke of tobacco also kills them; and cloth that has been steeped in a decoction of tobacco-leaves, will never afterwards be affected by them.

THE MAY FLY.

The May Fly is the largest of the British species. In the month of June it assembles in myriads under trees near waters, and dances away the few hours allotted to it, ascending and descending in the air, forming mazy circles, and giving life and animation to the loveliness of a balmy summer evening. Their larvæ are the favorite food of the fresh-water fishes, as are also the flies themselves. They are more numerous in running streams than in standing waters.

NEUROPTEROUS INSECTS.

THE insects of the Linnean order *Neuroptera* have four membranaceous, transparent, naked wings, in which the membranes cross each other so as to appear like net-work. The tail has no sting, but, in the males of many individuals, is furnished with appendices like pincers.

OF THE LIBELLULÆ, OR DRAGON-FLIES.

The mouth of the Dragon-fly is armed with jaws, generally more than two in number. The antennæ are very thin, of equal thickness throughout, and shorter than the thorax. The wings are expanded, and the tail of the male insect is furnished with a forked process.

Few of the insect tribes are more beautiful than these. Their colors are various and brilliant: we observe in them green, blue, crimson, scarlet, and white; and even in some individuals, most, if not all, of these colors are blended. In addition to the beauty of their colors, the brilliancy of their eyes, and the delicate texture and wide expansion of their wings, are highly deserving of notice and admiration.

The parent insects deposit their eggs on the surface of the water. Thence they sink to the bottom, where, in due time, they are hatched. The larvæ, which proceed from these eggs, are active inhabitants of the water; and, furnished with forcipated jaws, they prey with the most rapacious ferocity on aquatic insects. The *chrysalis* resembles the larvæ in every respect, except in having the rudiments of wings.

In both these primary states the insects respire water, by receiving and ejecting it at an aperture at the termination of their bodies. They are occasionally observed to throw water with such force, that the stream is perceptible to the distance of two or three inches from their bodies. But though the insect thus respires the water, air seems to be not the less necessary to its existence: for, like other insects, the whole interior part of its body is amply furnished with large and convuluted breathing-pipes; and, externally, there are several small openings destined for the introduction of air.

OF THE EPHEMERÆ, OR DAY-FLIES.

THE mouth of the Ephemera has no jaws, but is furnished with four very short thread-shaped feelers. The antennæ are short and thread-

shaped; and above the eyes there are two or three large stemmata. The wings are erect, (the lower ones much the shortest,) and the tail is terminated by long hairs or bristles.

The Ephemeræ differ in many respects from all other insects. Their *larvæ* live in water for three years, the time they consume in preparing for their change, which is performed in a few moments. The larva, when ready to quit that state, rises to the surface of the water, and, instantaneously freeing itself from its skin, becomes a chrysalis. This *chrysalis* is furnished with wings: it flies to the nearest tree or wall, and, there settling, it at the same moment quits a second skin, and becomes a perfect Ephemera. In this state all the species live but a very short time, some of them scarcely half an hour; having no other business to perform than that of continuing the race. They are called the insects of a day; but few of them ever see the light of the sun; being produced after sunset, during the short nights of summer, and dying long before the dawn. All their enjoyments, therefore, seem confined entirely to their larva state.

The Ephemera are very frequent near waters, and in some places they multiply enormously. About Laz, in Carniola, a province in Germany, we are informed by Scopoli, that they are so numerous in the month of June, that they are used as manure; and if each farmer cannot obtain more than *twenty cart-loads*, the harvest is considered a bad one.

The larvæ scoop out dwellings in the banks of rivers. These consist of small tubes, made like syphons, with two holes, the one serving for an entrance, and the other as an outlet; and these are so numerous, that the banks of some rivers are observed to be full of them. When the waters decrease, they dig fresh holes lower down. The flies are produced nearly all at the same instant, and in such numbers, as even to darken the air.

The females, aided by the threads of their tails, and the flapping of their wings, support themselves on the surface of the water, and, in an almost upright position, drop their eggs in little clusters into the water. A single insect will sometimes lay seven or eight hundred eggs.

OF THE PHRYGANEÆ, OR CADEW FLIES.

THE mouth is furnished with a horny, short, curved mandible, and four feelers. The antennæ are setaceous, and longer than the thorax. The wings are equal, and incumbent; and the lower ones are folded.

The Phryganeæ are to be observed, during the spring and summer months, flying about, or resting upon the grass and weeds near the borders of rivers, streams, and ponds. They deposit their eggs on aquatic plants. These are enclosed in a glairy matter, as transparent as water, and of the consistence of jelly, by means of which they firmly adhere to the place where they have been deposited.

The larvæ, when hatched, form for themselves tubes of silk, the interior of which is smooth and polished, and to the exterior of which

they attach fragments of different substances; thus constituting a strong defence against the attempts of their enemies. Some of the species employ, for this purpose, bits of leaves, straw, grass, or rushes; others adopt the shells of small aquatic snails; others, grains of sand; and others employ several different kinds mixed together. They contrive to make their habitations nearly in equilibrium with the water, by adding a bit of wood when too heavy, and some heavier substance when too light.

OF THE MYRMELEON, OR ANT-EATER TRIBE.

THE antennæ of these insects are about the length of the thorax, and thickest at the tip. The mouth is armed with jaws, teeth, and six feelers. The wings are deflected; and the abdomen of the male terminates in a forceps composed of two straight filaments.

The Myrmeleons constitute a tribe of insects, which, from their extremely singular habits, whilst in a larva state, are highly interesting.

The *larvæ* are hairy, with six feet; and have strong, exserted, and toothed jaws. They prey with savage ferocity on ants, and some of the smaller insects; and, for the purpose of ensnaring their prey, they form a kind of funnel or pit in light earth, at the bottom of which they lie buried.

The *chrysalis* is enclosed in a little ball of sand or earth, the particles of which are agglutinated together by a viscid matter, which the larva mixes with it previously to its change.

THE AMAZON-ANT.

The Amazon-ant, however, deviates from others in this respect:—their neuters procure auxiliaries by open violence, of their own caste but of different species. When the heat of the day begins to lessen, and exactly at the same hour for several days, they quit their nest, and advance in a solid column, more or less numerous according to their population, upon the ant-hill they mean to attack. Into it they soon penetrate, notwithstanding the opposition of the inhabitants, seize the larvæ and nymphs of the neuters peculiar to the invaded community, and transport them in the same warlike order to their own garrison, where they are attended to by other neuters of their own species, who have been either metamorphosed there, or brought as captives from their original dwelling. These constitute what are called mixed ant-hills.

Our northern species differ from those of the torrid zone, in remaining torpid during winter, so that they require no sustenance, and accordingly lay up no store; but the others, which continue active, make provision for the evil day. Their food consists of fruit, insects or their larvæ, dead bodies of small quadrupeds or birds, and sweets of every description within their reach.

HYMENOPTEROUS INSECTS.

OF THE CYNIPS, OR GALL-INSECT TRIBE.

THE insects of the Linnean order *Hymenoptera* have generally four membranaceous, naked wings. In some of the tribes the neuters, and in others, the males or females, are destitute of wings. The tail, in the females and neuters, is armed with a sting.

The mouth is furnished with a short, single-toothed, membranaceous jaw. The mandibles are horny and cleft, and the lip is entire. The feelers are four in number. The sting is spiral, and often concealed within the body.

Most of the Gall-insects are produced from eggs deposited by the parents in the tender branches, or upon the leaves of trees in the spring of the year; others live concealed among the leaves, and others are bred in the bodies of other insects.

Those which deposit their eggs in the branches or leaves of trees, place them in a small hollow, which they form by means of an instrument at the posterior part of their body. Each egg is fixed to the spot by a kind of gluey matter, with which it is covered.

The juices of the leaf or stem overflow by the small vessels, which are opened in this operation, and thus form a gall or excrescence, in which the egg becomes enclosed. When the larva is hatched, it finds around it the food, that is necessary for its subsistence. It gnaws and lives upon the substance of the gall, which increases in bulk and consistence, in proportion as its interior is thus destroyed.

Some of these galls have, in their interior, either only one cavity, in which many larvæ are enclosed together, or many small cavities, having a communication with each other; some have many separate cavities; and others have only one cavity, which is occupied by a solitary insect.

When the larvæ have attained their full growth, some of the species eat their way out, and drop upon the earth, in which they bury themselves, and there undergo their metamorphosis; and others are transformed within the galls, and leave them only as perfect insects.

OF THE TENTHREDO, OR SAW-FLY TRIBE.

THE mouth has a horny curved mandible, toothed within. The jaw is straight and obtuse at the tip, and the lip is cylindrical and bifid. The feelers are four in number, and filiform. The wings are tumid,

the lower ones shorter than the others. The sting is composed of two serrated laminæ, and is almost concealed in the body.

This insect is small, of a yellowish tinge, and, in its general appearance, is not much unlike a common house-fly.

By means of the saw with which these insects are supplied, some of the species deposit their eggs in the buds of flowers, and others in the twigs of trees or shrubs. This implement, which is situated in the posterior part of their body, is formidable only in appearance, and seems destined solely to the purpose of depositing their eggs.

The larvæ have from eighteen to twenty-eight legs. They subsist on the leaves of plants; and, when full grown, some of them bury themselves in the ground, and others form a nidus between the leaves of the plant on which they feed, and within it change to a *pupa*. Those which undergo their change under the earth, usually remain there during the winter, the perfect insect issuing forth in the ensuing spring.

OF THE ICHNEUMONS.

THE antennæ of the Ichneumon-flies taper towards their extremity and consist of more than thirty joints or articulations. The mouth is armed with jaws, and has four unequal thread-shaped feelers. At the extremity of the abdomen there is a long sting, having, however, no pungent property, enclosed in a cylindrical sheath composed of two valves.

THE ICHNEUMON FLY.

THE GADFLY.

The larvæ of all the Ichneumons derive nutriment from other insects. The female, when about to lay her eggs, perforates with her sting either the body or the nidus of some other insect or caterpillar, and deposits them there. The sting of one of the species, though extremely fine, is so strong as to penetrate through mortar and plaster. The food of the family to be produced from the eggs of this fly, is the larvæ of wasps or mason-bees; for the parent Ichneumon no sooner discovers one of the nests of these insects, than it fixes on it and in a moment bores through the mortar, of which it is built.

Some species agglutinate their eggs upon caterpillars; others penetrate the bodies of caterpillars, and deposit their eggs in the inside. When the *larvæ* are hatched, their heads are so situated that they pierce the caterpillars, and penetrate to their very entrails. These larvæ suck the nutritious juices of the creatures without attacking their vitals; for they seem to be all the time perfectly healthy, and

even sometimes are enabled to transform themselves into chrysalids. "A friend of mine," says Dr. Derham, "put about forty large caterpillars, collected from cabbages, on some bran and a few leaves, into a box and covered it with gauze to prevent their escape. After a few days we saw from more than three-fourths of them, about eight or ten little caterpillars of the Ichneumon fly come out of their backs, and spin each a small cocoon of silk, and in a few days the large caterpillars died." The Ichneumons performed singular service, in the years 1731 and 1732, by multiplying in the same proportion as the caterpillars. Their larvæ consequently destroyed infinitely more of these voracious creatures than could possibly have been done by all the efforts of human industry. Aphides, or Plant-lice, and the larvæ of various other insects, are also made the nidus of the Ichneumon.

OF THE SPHEGES.

THE antennæ in this tribe consist of ten joints or articulations; and the mouth is armed with jaws. The wings in both sexes are extended, and do not fold together. The sting is pungent, and concealed within the abdomen.

Many species of Sphex are common in England. They are chiefly found in woods and hedges; and their larvæ feed on dead insects, in the bodies of which the parent Spheges lay their eggs.

Some of the species, like Dogs, dig holes in the earth with their fore-feet, and in each of these, after having deposited their eggs in its body, they bury an insect, and then carefully close it up with earth.

There are no insects, which display greater affection for their offspring than these; nor are any more rapacious. They are excessively fierce, and, without hesitation, attack insects much larger than themselves. Their strength is very great; their jaws are hard and sharp, and their stings are armed with poison, which suddenly proves fatal to most of the creatures with which they engage. The Sphex seizes, with the greatest boldness, on the creature it attacks, giving a stroke with amazing force, then falling off, to rest from the fatigue of the exertion, and to enjoy the victory. It keeps, however, a steady eye on the object it has struck, until it dies, and then drags it to its nest for the use of its young. The number of insects, which this creature destroys, is almost beyond conception, fifty scarcely serving it for a meal. The mangled remains of its prey, scattered round the mouth of its retreat, sufficiently betray the sanguinary inhabitant. The eyes, the filament that serves as a brain, and a small part of the contents of the body, are all that the Sphex devours.

OF THE SAND-WASP TRIBE.

THE beak is conical, inflected, and contains a retractile, tubular tongue, that is cleft at the end. The jaws form a kind of forceps, and are three-toothed at the tip; and the antennæ in each sex are thread-

shaped, with about fourteen joints or articulations. The eyes are oval, and the wings plain. The sting is pungent, and concealed in the abdomen.

The Sand-wasps were separated, by the Rev. Mr. Kirby, from the last tribe, though, in their manners and economy, the insects of each have a near resemblance. In their external appearance, however, there are characteristics sufficient to admit, with great propriety, of two genera.

OF THE WASP TRIBE.

THE mouth is horny, and furnished with a compressive jaw, and four unequal, thread-shaped feelers. The antennæ are filiform, the first joint longer than the rest, and cylindrical. The sting is pungent, and concealed within the abdomen.

THE WASP AND HORNET.

The Wasps, like Bees, are in general found in large societies; and they construct curious combs or nests, in which they deposit their eggs. Some, however, are solitary, and form for each young-one a separate nest. Their *larvæ* are soft, without feet, and are fed with the nectar of flowers or honey, but of a kind very inferior to that collected by the Bees. The *chrysalis* is without motion, and has the rudiments of wings.

A distinguishing character of this tribe is their having smooth bodies, apparently without hairs, and their upper wings, when at rest, folded through their whole length. At the base of each of these there is a scaly process, that performs the office of a spring, in preventing the wings from rising too high; a caution of some importance to these carnivorous insects, which pursue their prey at full stretch of wing.

THE HORNET.

It is chiefly in the hollow trunks of decayed trees that the Hornets form their nest. They live collected together in communities, which consist of males, females, and neuters or laborers. Their nest is of a dirty yellowish color, and usually constructed under the shelter of some outhouse, in the hole of an old wall, or more frequently in the hollow trunk of some decayed tree. The hole of entrance to this nest is often not more than an inch in diameter.

In the spring of the year, those of the females which have survived the winter, are reanimated by the warmth of the season, issue from their hiding-places, and search out a convenient place in which they can establish their nest. When this is found, they commence their

first operation by forming a column, of the same materials as those which are afterwards employed in the other parts of the fabric, but much more compact and solid. This column the female fixes in the most elevated part of the vault, which is intended to contain the nest. A kind of cover is next formed, and then a small comb of hexagonal cells, with their openings downward, for the purpose of containing her eggs and the grubs which issue from them.

The eggs are soon hatched, and the mother nourishes her offspring with food which she brings to them from abroad. When the grubs have attained their full size, they each spin a silken bed, in which they undergo their metamorphoses into *pupæ*, and afterwards into perfect or winged insects.

The insects first produced are the neuters. These are the working insects, or laborers. From their first entrance into life they are occupied in the work of constructing cells, and in the duty of nourishing the remaining grubs.

As the females still continue to lay their eggs, the family is consequently augmented; and the nest becoming at length too small, necessity requires it to be enlarged. This operation also falls upon the laborers.

In the month of September and the beginning of October, the brood of males and females quit their *pupæ* state. All that are left, whether males, females, or neuters, are generally put to death before the end of October, particularly if the frosts have at all begun to be felt. The Hornets, in place of continuing to nourish the remaining grubs, are now occupied only in tearing in pieces the cells, and throwing them out of the nest. After this period both the males and the neuters daily perish in great numbers; so that, by the end of winter, the females, which are enabled to pass that season in a torpid state, are the only ones that remain alive.

Thus terminates this society, of which the greatest population does not often exceed the number of a hundred or a hundred and fifty individuals.

The combs are composed of a substance which somewhat resembles coarse paper or old parchment.

These insects are extremely voracious. They seize upon and devour, with great eagerness, other insects, and frequently even bees. Their size gives them a superiority over almost all the flies which they attack; but as they are somewhat slow and heavy in their flight, these are frequently able, by their greater agility, to escape.

THE COMMON WASP

The nest of the common Wasp is always formed under the surface of the earth, and these insects not unfrequently occupy with it the forsaken dwelling of a mole. The entrance to the nest is a passage usually about an inch in diameter, from half a foot to two feet deep, and generally in a zigzag direction.

When exposed to the view, the whole nest appears to be of a round-

ish form, and is twelve or fourteen inches in diameter. It is strongly fortified all round with walls, in layers, formed of a substance somewhat like paper, the surface of which is rough and irregular. In these walls, or rather in this external covering, two holes are left for passages to the combs, one of which is uniformly adopted for entrance, and the other as a passage out. The interior of the nest consists of several stories, or floors of combs, which are parallel to each other, and nearly in an horizontal position. Every story is composed of a numerous assemblage of hexagonal cells. These contain neither wax nor honey, but are solely destined for containing the eggs, the worms which are hatched from them, the chrysalids, and the young Wasps until they are able to fly. The combs are from eleven to twelve in number. Reaumur computed the number of cells in the combs of a middle-sized nest to be at least ten thousand; and as every cell serves for three generations, a nest of this description would annually give birth to *thirty thousand* Wasps.

The different stories of combs are always about half an inch distant. By this arrangement, free passages are left to the Wasps from one part of the nest to another. Each of the larger combs is supported by about fifty pillars, which at the same time that they give solidity to the fabric, greatly ornament the whole nest. The lesser combs are supported by a similar contrivance. The Wasps always begin at the top and work downward.

In the republic of Wasps, like that of Bees, there are three different kinds of flies; males, females, and neuters. The greatest share of labor devolves upon the neuters: but they are not, like the neuter bees, the only workers; for there is no part of the different operations which the females, at certain times, do not execute. Nor do the males remain entirely idle. The neuters, however, build the nest, feed the males, the females, and even the young-ones. But, while these are occupied in different employments at home, the others are abroad in hunting-parties. Some of them attack with intrepidity live insects, which they sometimes carry entire to the nest; but if these be at all large they transport only the abdomen. Others make war on the bees, killing them for the honey they have in their bodies, or plundering their hives for the fruits of their labor. Some resort to the gardens, and suck the juices of fruit; and others pillage butchers' stalls, from which they often arrive with a piece of meat larger than even half of their own bodies.

When they return to their nest, they distribute a portion of their plunder to the females, to the males, and to such neuters as have been usefully occupied at home. As soon as a neuter enters the nest, it is surrounded by several Wasps, to each of which it freely gives a portion of the food it has brought. Those that have not been hunting for prey but have been sucking the juices of fruits, though they seem to return empty, fail not to regale their companions; for, after their arrival, they station themselves at the upper part of the nest, and discharge from their mouths two or three drops of clear liquid, which are immediately swallowed by the domestics.

The neuter Wasps are the smallest, the females are much larger and

heavier than these, and the males are of an intermediate size between the two. In the hive of the Honey-bee the number of females is extremely small; but in a Wasp's nest they often amount to more than three hundred.

The eggs are white, transparent, and of an oblong shape; but they differ in size, according to the kind of Wasps that are to proceed from them. At the end of eight days after they are deposited in the cells, the grubs are hatched. These demand the principal care of such Wasps as continue always in the nest. They are fed in the same manner as birds, by receiving, from time to time, a mouthful of food from the insects which have the care of them. It is astonishing to see with what industry and rapidity a female runs along the cells of a comb, and distributes to each worm a portion of nutriment. In proportion to the ages and condition of the worms, they are fed with liquid substance, or with solid food.

When a worm is so large as to occupy its whole cell, it is ready to be metamorphosed into a chrysalis. It then refuses all nourishment, and ceases to have any connexion with the Wasps in the nest. It closes the mouth of its cell with a fine silken cover. This operation is completed in three or four hours, and the animal remains a chrysalis nine or ten days. After this it destroys, with its teeth, the external cover of the cell, and issues forth a winged insect, which is either male, female, or neuter, according to the nature of the egg from which it was hatched. In a short time the Wasps newly transformed receive the food that is brought to them by the foragers from the fields. What is still more wonderful is, that in the course of even the first day after their transformation, the young Wasps have been observed to go into the fields, bring in provisions, and distribute them to the worms in the cells. A cell is no sooner abandoned by a young Wasp, than it is cleaned, trimmed, repaired by the old ones, and rendered in every respect proper for the reception of another egg.

Cells are constructed of different dimensions for the neuters, males, and females; and it is very remarkable, that those of the neuters are never intermixed with the cells destined for others.

About the beginning of October, every nest presents a strange scene of cruelty. At this season, the Wasps not only cease to bring nourishment to their young-ones, but they drag the grubs from their cells, and carry them out of the nest, where they are either killed by the Wasps, or perish from exposure to the weather and deprivation of food. This procedure would at first seem a strange violation of parental affection; but the intentions of Providence, though they often elude our researches, are never wrong. What appears to us cruel and unnatural, in this instinctive devastation committed annually by the Wasps, is perhaps an act of the greatest mercy that could have taken place. Wasps are not, like the Honey-bees, endowed with the instinct of laying up a store of provisions for winter If not prematurely destroyed by their parents, the young-ones must necessarily die a cruel and lingering death, occasioned by hunger. Hence this seemingly harsh conduct in the economy of Wasps, instead of affording an

exception to the universal benevolence and wisdom of nature, is, in reality, a most merciful effort of instinct.

Like the male Honey-bees, the male Wasps are destitute of stings; but the females and neuters have stings, the poisonous liquor of which, when introduced into any part of the human body, excites inflammation, and creates a considerable degree of pain. Their sting consists of a hollow and very sharp-pointed tube, having at its root a bag of pungent juice, which, in the act of stinging, is pressed out, and conveyed through the tube into the flesh. There are also two small, sharp, and bearded spears, lying, as in a sheath, within the tube. Dr. Derham counted, on the side of each spear, eight beards, which, he says, were formed somewhat like the beards of fish-hooks. These spears lie one with its points a little before the other in the sheath, to be ready, in all probability, to be first darted into the flesh; where, being once fixed, by means of its foremost beard, the other then strikes in also; and, in this manner, they alternately pierce deeper and deeper, their beards taking more and more hold in the flesh; after which the sting or sheath follows, in order to convey the poison into the wound.

OF THE BEES IN GENERAL.

THESE insects are very numerous, and differ considerably in their habits. Some of the species are found in extensive communities, which construct, with the utmost art, cells for their offspring, and repositories for their food; while others both dwell and work in solitude. The whole tribe live on the nectar of flowers, and on ripe fruit.

Their *larvæ* are soft and without feet, and the *chrysalis* resembles the perfect insect.

THE WOOD-PIERCING BEE.

The operations of the Wood-piercers merit our careful attention. In the spring of the year they frequent gardens, and search for rotten, or at least for dead wood, in order to make a habitation for their young-ones. They usually choose the decaying uprights of arbors, espaliers, or the props of vines; but they will sometime attack garden-seats, thick doors and window-shutters.

When the female of this species, (for in her operation she receives no assistance from the male,) has selected some old wooden post suited to her purpose, she begins her work by boring perpendicularly into it; when she has advanced about half an inch, she changes her direction, and then proceeds nearly parallel with its sides, for twelve or fifteen inches, making the hollow about half an inch in diameter. If the wood be sufficiently thick, she sometimes forms three or four of these long holes in its interior; a labor, which, for a single insect,

seems prodigious; and in the execution of it some weeks are often employed. On the ground, for about a foot from the place in which one of these Bees is working, little heaps of timber-dust are to be seen. These heaps daily increase in size, and the particles that compose them are almost as large as those produced by a hand-saw. The strong jaws of this insect are the only instruments of perforation which she employs. After the holes are prepared, they are divided into ten or twelve separate apartments, each about an inch deep, the roof of one serving for the bottom of another. The divisions are composed of particles of wood, cemented together by a glutinous substance from the animal's body. In making one of these she commences by gluing an annular plate of wood-dust, about the thickness of half-a-crown, round the internal circumference of the cavity: to this plate she attaches a second, to the second a third, and so on till the whole floor is completed. Before each cell is closed, it is filled with a paste composed of the farina of flowers mixed with honey, and an egg is deposited in it. When the larva is hatched, it has scarcely room sufficient to turn itself in the cell; but as the paste is devoured, the space is enlarged so as to allow the animal to perform every necessary operation towards changing its state.

In a range of cells, the worms are necessarily of different ages, and of course of different sizes. Those in the lower cells are older than those in the upper; because, after the Bee has filled with paste, and enclosed the first cell, a considerable time is requisite to collect provisions, and to form partitions for every successive and superior cell. The former, therefore, must be transformed into nymphs and flies before the latter. These circumstances would almost appear to be foreseen by the mother; for if the undermost worm, which is the oldest, and soon transformed, were to force its way upward, which it could easily do, it would not only disturb, but would infallibly destroy all those lodged in the superior cells. But Providence has wisely prevented this devastation; for the head of the nymph, and consequently of the fly, is always placed in a downward direction. Its first instinctive movements must, consequently, be in that direction. That the young Bees may escape from their respective cells, the mother digs a hole at the bottom of the long tube, which makes a communication between the undermost cell and the open air. Sometimes a similar passage is made near the middle of the tube. By this contrivance as all the Bees instinctively endeavor to cut their way downward, they find an easy and convenient passage; for they have only to pierce the floor of their cells in order to make their escape, and this they do with their teeth very readily.

THE HIVE BEE.

In the formation of their combs, the present insects seem to resolve a problem which would not be a little puzzling to some geometricians, namely: "A quantity of wax being given, to make of it equal and similar cells of a determined capacity, but of the largest size in

proportion to the quantity of matter employed, and disposed in such a manner as to occupy in the hive the least possible space." Every part of this problem is completely executed by the Bees. By applying hexagonal cells to the sides of each other, no void spaces are left between them; and, though the same end may be accomplished by other figures, yet such would necessarily require a greater quantity of wax than these. Besides, hexagonal cells are best fitted to receive the cylindrical bodies of the larvæ. A comb consists of two strata of cells, applied to each other's ends. This arrangement both saves room in the hive, and gives a double entry into the cells of which the comb is composed.

THE HIVE BEES.

As a further saving of wax, and for preventing void spaces, the bases of the cells in one stratum of a comb, serve also for bases to the opposite stratum. In short, the more minutely the construction is examined, the more will the admiration of the observer be excited. The walls of the cells are so extremely thin, that their mouths might be thought in danger of suffering by the frequent entering and issuing of the Bees. To prevent this, the Bees make a kind of rim round the margin of each cell, and this rim is three or four times thicker than the walls.

It is difficult to perceive, even with the assistance of glass hives, the manner in which Bees operate when constructing their cells. They are so eager to afford mutual assistance, and for this purpose so many of them crowd together, and are perpetually succeeding each other, that their individual operations can seldom be distinctly observed. It has, however, been discovered that their two jaws are the only instruments they employ in modelling and polishing the wax. With a little patience and attention, we perceive cells just began: we likewise remark the quickness with which a Bee moves its teeth against a small portion of the cell. This portion the animal, by repeated strokes on each side, smooths, renders compact, and reduces to a proper thinness. While some individuals of the hive are lengthening their hexagonal tubes, others are laying the foundation of new ones. In certain circumstances, when extremely hurried, they do not complete their new cells, but leave them imperfect until they have begun a number sufficient for their present exigencies. When a Bee puts its head a little way into a cell, we easily perceive it, with the points of its teeth, scraping the walls, in order to detach such useless and irregular fragments, as may have been left in the work. Of these fragments the Bee forms a ball, about the size of a pin's head. It issues from the cell, and carries this wax to another part of the work, where it is wanted: it no sooner leaves the cell than it is succeeded by another Bee, which performs a similar office: and in this manner the work is successively carried on, till the cell is completely polished.

Their mode of working, and the disposition and division of their labor, when put into an empty hive, are very wonderful. They

immediately begin to lay the foundations of their combs. This is an operation, which they execute with surprising quickness and alacrity. Soon after they have begun to construct one comb, they divide into two or three companies, each of which, in different parts of the hive, is occupied in similar operations. By this division of labor, a great number of Bees have an opportunity of being employed at the same time, and consequently, the common work is sooner finished. The combs are generally arranged in a direction parallel to each other. An interval or street between them is always left, that the Bees may have a free passage, and an easy communication with the different combs in the hive. These streets are just wide enough to allow two Bees to pass one another. Besides these parallel streets, the Bees to shorten their journey when working, leave several cross passages, which are always covered.

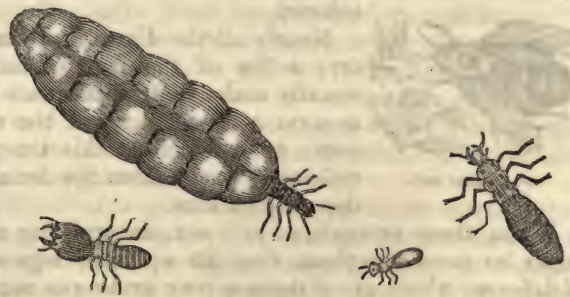
They are extremely solicitous to prevent insects of any kind from getting admittance into their hives. To accomplish this purpose, and to shut out the cold, they carefully examine every part of their hive; and if they discover any holes or chinks, they immediately paste them firmly up with a resinous substance, which differs considerably from wax. This substance was known to the ancients by the name of *propolis*, or bee-glue. Bees use the propolis for rendering their hives more close and perfect, in preference to wax, because it is more durable, and because it more powerfully resists the vicissitudes of weather than that. This glue is not, like the wax, formed by an animal process. The Bees collect it from different trees, such as the poplar, birch, and willow. It is a complete production of nature, and requires no additional manufacture from the animals by which it is employed. After a Bee has procured a quantity sufficient to fill the cavities of its two hind legs, it repairs to the hive. Two of its companions instantly draw out the propolis, and apply it to fill up such chinks, holes, or other deficiencies, as they find in their habitation. But this is not the only use to which Bees apply the propolis. They are extremely solicitous to remove such insects or foreign bodies, as happen to get admission into the hive. When these are so light as not to exceed their powers, they first kill the insect with their stings, and then drag it out with their teeth. But it sometimes happens, that an ill-fated snail creeps into the hive. This is no sooner perceived, than it is attacked on all sides, and stung to death. But how are the Bees to carry out so heavy a burden? Such a labor would be in vain. To prevent the noxious odors consequent on its putrefaction, they immediately embalm it, by covering every part of its body with propolis, through which no effluvia can escape.

But propolis, and the materials for making wax, are not the only substances, which these industrious animals have to collect. As, during the whole winter, and even during many days in summer, the Bees are prevented by the weather from going abroad in quest of provisions, they are under the necessity of collecting and amassing, in cells destined for the purpose, large quantities of honey. This, by means of their trunk, they extract from the nectariferous glands of flowers. The trunk of the Bee is a kind of rough, cartilaginous tongue.

After collecting a few small drops of honey with this, the animal carries them to its mouth, and swallows them. From the gullet they pass into the first stomach. This when filled with honey, assumes the figure of an oblong bladder, the membrane of which is so thin and transparent, that it allows the color of the liquid it contains to be distinctly seen. As soon as their stomach is full, the Bees return directly to the hive, and disgorge into a cell the whole of the honey they have collected. It, however, not unfrequently happens, that on its way to the hive the Bee is accosted by a hungry companion. How the one manages to communicate its wants to the other, is not known. But the fact is certain, that when two Bees meet in this situation, they mutually stop, and the one whose stomach is full of honey, extends its trunk, opens its month, and like a ruminating animal, forces up the honey. The hungry Bee, with the point of its trunk, sucks the honey from the other's mouth. When not stopped on the road, the Bee, as before stated, proceeds to the hive, and in the same manner offers its honey to those who are at work, as if it meant to prevent the necessity of their quitting their labor in order to go in quest of food. In bad weather, the Bees feed on the honey laid up in open cells; but they never touch their reservoirs, while their companions are enabled to supply them with fresh honey from the fields. The mouths of those cells, which are destined for preserving honey during the winter, they always cover with a lid or thin plate of wax.

THE QUEEN BEE.

How numerous soever the Bees in one swarm may appear to be they all originate from a single parent. It is indeed surprising, that one small insect should, in a few months, give birth to so many young-ones; but, on opening her body at a certain season of the year, eggs to the number of many thousands may be found contained in it.



THE QUEEN BEE AND PREGNANT QUEEN BEE.

The queen is easily distinguished from the rest by the size and shape of her body. On her depends the welfare of the whole community: and, by the attention that is paid to all her movements, it is evident how much they depend on her security. At times, attended by a numerous retinue she is seen in the act of marching from cell to cell, plunging the extremity of her body into each of them, and leaving in each an egg.

A day or two after this egg is deposited, the grub is excluded from

the shell, having the shape of a maggot rolled up in a ring, and lying softly on a bed of a whitish-colored jelly, on which it begins to feed.

THE DRONE BEE.

The common Bees then attend with astonishing tenderness and anxiety: they furnish it with food, and watch over it with unremitting assiduity. In about six days the grub attains its full growth, when its affectionate attendants shut up the mouth of its apartment with wax, in order to secure it from injury. Thus enclosed, it soon begins to line the walls of its cell with a silken tapestry, in which it undergoes its last transformation.

When it first crawls forth a winged insect, it is very weak and inactive; but in the course of a few hours, it acquires strength enough to fly off to its labor. On its emerging from the cell, the officious Bees flock round it, and lick up its moisture with their tongues. One party brings honey for it to feed upon; and another is employed in cleansing the cell, and carrying out the filth, for the purpose of preparing it for a new inhabitant.

The neuter Bees in a hive amount to the number of sixteen or eighteen thousand. These are all armed with stings. The males are called *Drones:* they are unarmed, and are always killed by the neuters, about the month of September.

THE CARDING BEE.

This Bee is yellow, with the hair of the thorax somewhat fawn-colored.

THE CARDING BEE.

Nearly all the Carding Bees perish in the winter: a few of the females only survive. These usually make their appearance early in the spring, as soon as the catkins of the willows are in blossom; upon which, at this time, they may be seen collecting honey from the female, and pollen from the male catkins.

When these animals, of any sex, are walking on the ground, if a finger be moved to them, they lift up three legs on one side, by way of defence; which gives them a very grotesque appearance.

Their nests are usually formed in meadows and pastures, sometimes in groves and hedge-rows, where the soil is entangled with roots; but now and then these are found in heaps of stones. When they do not meet with an accidental cavity ready made, the Carding Bees, with great labor, excavate one. This they cover with a thick convex vault of moss, sometimes casing the interior with a kind of coarse wax, to keep out the wet. At the lower part of the nest there is an opening for the inhabitants to go in and out at. This entrance is often through a long gallery, or covered way, a foot or upwards in length, by which the nest is concealed from observation.

The mode in which they transport the moss employed in the for-

mation of their nest, is singular. When they have discovered a parcel fitted to their purpose, and conveniently situated, they place themselves in a line, with their backs turned towards the nest. The foremost lays hold of some with her jaws, and clears it, bit by bit, with her fore-feet. When this is sufficiently disentangled, she drives it with her feet under her body, and as far as possible beyond, to the second Bee. The second pushes it on to the third and so on. Thus small heaps of prepared moss are conveyed, by a file of four or five insects, to the nest, where they are wrought and interwoven with the greatest dexterity by those that remain within.

OF THE ANTS IN GENERAL.

ALL the species of Ants known in this country are gregarious; and, like the bees, consist of males, females, and neuters; the latter alone are the laborers. These build in the ground an oblong nest, in which there are various passages and apartments. In the formation of the nest every individual is occupied: some are employed in securing a firm and durable groundwork, by mixing the earth with a sort of glue produced in their bodies, others collect little bits of twigs to serve as rafters, placing them over their passages to support the covering; others again lay pieces across these, and place on them rushes, weeds and dried grass. The latter they secure so firmly, as completely to turn off the water from their magazines.

From the eggs of these insects proceed the larvæ, a small kind of maggots without legs, which soon transform into white chrysalids. The latter are generally called *Ants' eggs*, and are frequently used for the feeding of young Pheasants, Partridges, and Nightingales.

The males are much smaller than the females, and seldom frequent the common habitation. All the labor which the females undergo, is the laying of eggs; and the cold weather of winter always destroys them. The neuters, or laboring Ants, which alone are able to struggle through the winter, pass this season in a torpid state. The females and neuters are each armed with stings.

It is said that the Ants of *tropical climates* are never torpid; that tney build their nests with a dexterity, lay up provisions, and submit to regulations, that are entirely unknown among those of Europe. They are, in every respect, a more formidable race. Their stings produce insupportable pain, and their depredations do infinite mischief. Sheep, hens, and even rats, by loitering too near their habitations, are often destroyed by them.

THE HORSE EMMET, OR GREAT HILL-ANT.

It is chiefly near the old and decayed trunks of trees that the Hill-ants form their settlements. Their nest consists of a great number of apartments. In these they have their magazines, and bring forth and rear their offspring.

It is the peculiar habit of the Hill-ants to collect a vast quantity of pieces of dry sticks, chips, bits of straw, and other rubbish, which they carry to the surface of their colonies, and there place together in heaps, which sometimes become immensely large. This employment they renew every spring, and continue through the whole summer. It is not a little curious to observe from what distances they will bring, and with what dexterity they manage, sticks an inch or two in length.

THE RED ANT.

The lodgments of this species are often found under flat stones and rubbish; and not unfrequently in the forsaken habitations of Moles. In the latter of these situations, the process of forming their nest is curious. They cut the earth into small parcels, and incrust these with the blades of grass. As the blades, towards the month of June (when this work is in progress) grow every day, so the Ants advance their labors in proportion, By this contrivance, in somewhat more than a month they have a number of little mounts, each about six inches high. The architecture of these is slight, and the demolition easy; but, without any serious accident, they last long enough to answer every purpose for which they were formed. The nests of such Red Ants as reside under stones or pavements, in old walls, or under rubbish, do not require out-works, and consequently the insects do not here form them, but are content with the covering they find.

In collecting their stores, these creatures may often be observed in full employment; one of them loaded with a grain of wheat, another with a dead fly, and several together hauling along the body of some larger insect. Whenever they meet with any food too large to admit of being dragged away, they devour so much of it upon the spot, as to reduce it to a bulk sufficiently small for them to carry.

DIPTEROUS INSECTS.

THE Linnean order *Diptera,* comprises those insects that have only two wings, each furnished at its base with a poise or balancer.

OF THE OESTRI, OR GAD-FLIES.

FROM the posterior part of the body of the Gad-flies issues a wimble of wonderful structure. It is a scaly cylinder, composed of four tubes, which draw out like the pieces of a spying-glass. The last of these is armed with three hooks, and is the gimlet with which the insect bores through the tough hide of horned cattle, for the purpose of depositing there her egg. When this is hatched, the grub feeds on the matter issuing from the wound; and the nidus forms upon the body of cattle a lump, sometimes above an inch high. Some of the species deposit their eggs in the nostrils of sheep, and others in places from which the larvæ, as soon as hatched, can be conveyed into the intestines of horses.

The larvæ are without feet, short, thick, soft, and annulate. When full grown, they let themselves fall to the earth, and they generally pass their chrysalid state under cover of the first stone they meet with.

OF THE TIPULÆ, OR CRANE-FLIES.

IN their general form, the Tipulæ have a general resemblance to the Gnats, but they are easily distinguished from those insects, by having expanded wings, and being destitute of the long proboscis which is so conspicuous in the Gnats. From the commencement of spring until the beginning of autumn, the larger kinds of Tipulæ are to be seen in great numbers in pastures and meadows. Some of the species lay their eggs upon the ground amongst the grass, and others in the hollows of decayed trees. The *larvæ* are without feet, soft, and cylindrical.

Both the *larvæ* and *chrysalids* of the smaller Tipulæ are found in water, and are very various, both in size and color. Some are furnished with a pair of arms; and others are enclosed in cylindrical tubes, open at the ends. The latter swim nimbly, but the former always remain in holes which they have formed in the banks of rivulets. Some of the species spin a silken case round part of their body. Their whole frame is, in general, so very tender, that, in some of the species, a touch only is sufficient to crush them.

OF THE FLIES IN GENERAL.

THE mouth of these insects has a soft, fleshy proboscis, with two equal lips; and the sucker is furnished with bristles. The antennæ are generally very short.

The appellation of Fly has been given almost exclusively to these insects, probably from their being much more common than any others. The larvæ of some of the species live in water; those of others are found on trees, where they devour aphides or plant-lice; and others in putrid flesh, cheese, &c. Most of the flies are torpid during the winter, and therefore lay up no provision for their nourishment in the cold season. At the decline of the year, when the mornings and evenings become chilly, many of them come for warmth into houses, and swarm in the windows. At first they appear very brisk and alert; but as they become torpid they seem to move with difficulty, and at last are scarcely able to lift their legs. These seem as if they were glued to the glass; and by degrees many of the insects do actually stick on the glass till they die. It has been observed that some of the flies, besides sharp, hooked nails, have skinny palms or flaps to their feet, by which they adhere to glass and other smooth bodies, and walk on ceilings with their backs downward. They are enabled to do this, by the pressure upon those flaps by the atmosphere; the weight of which they easily overcome in warm weather, when they are brisk and alert. But towards the end of the year this resistance becomes too mighty for their diminished strength; and we see flies laboring along, and lugging their feet on windows as if they stuck fast to the glass; and it is with the utmost difficulty they can draw one foot after another, and disengage their hollow caps from the slippery surface. On a principle exactly similar to this it is, that boys, by way of amusement, carry heavy weights, by only a piece of wet leather at the end of a string, clapped close to the surface of a stone.

It is a very extraordinary fact, that flies have been known to remain immersed in strong liquors, even for several months, and afterwards, on being taken out, and exposed to the air, have again revived. Some, we are told by Dr. Franklin, were drowned in Madeira wine, when bottled in Virginia to be sent to England. At the opening of a bottle of this wine at a friend's house in London, many months afterwards, three drowned flies fell into the first glass that was filled. The Doctor says, that having heard it remarked that drowned flies were capable of being revived by the rays of the sun, he proposed making the experiment. They were therefore exposed to the sun, upon the seive which had been employed to strain them from the wine. In less than three hours two of them, by degrees, began to exhibit signs of life. Some convulsive motions were first observed in the thighs; and at length they raised themselves upon their legs, wiped their eyes with their fore-feet, and, soon afterwards, flew away. The Rev. Mr. Kirby informs me, that he has made the same observation on flies

taken out of home-made wines. He says that many have recovered, after having been twelve months immersed.

THE COMMON FLESH-FLY.

It is a fact not generally known, that this is a viviparous insect, depositing its offspring, in a living state, on the meat in our shambles and larders. The young-ones appear under the same worm-like form, as the grubs produced from the Blue Flesh-fly. They feed as those do, increase in size, undergo all their transformations in the same manner, and even in the fly-state appear but little different.

THE HESSIAN FLY.

Among the various causes of alarm experienced by the farmer in the course of his rural labors, few are more powerful, though many more justly so, than the larvæ or grubs of this little fly. These are lodged and nourished within the stems of wheat and rye, just above the root, which they entirely destroy.

THE CHEESE-FLY.

The larvæ of these flies are the troublesome maggots found in cheese, and so well known to housewives under the name of *Hoppers*. They proceed from eggs deposited in the crevices or holes of the cheese by the parent fly.

This maggot is surprisingly strong and vigorous, and, when disturbed leaps to a considerable distance. To do this, it erects itself on its tail, and, bending its head into a circle, fixes two black claws, which are situated at the end of the tail into two cavities formed for their reception at the back of the head. It then exerts its muscular powers, and, in suddenly extending its body, throws itself, for its size, to a vast distance. One of these insects, which was not the fourth of an inch long, has been known to leap thus, out of a box six inches deep, or to twenty-four times its own length.

OF THE TABANUS, OR WHAME-FLY TRIBE.

THE insects of the present tribe subsist on the blood of animals, which they suck with great avidity, by means of their proboscis. They are chiefly active during the hottest weather of summer. In most of the species the eyes are beautifully colored. Wet meadows and moist woods are the places in which they principally abound. The *larvæ* of some of the species live underground.

THE HORSE-FLY, AND GREEN-EYED WHAME-FLY.

The puncture of both these insects is extremely keen and painful. During the summer-time, the former torment horses and cattle in such a degree, as sometimes to throw them into a state of the utmost agitation and alarm. They are more abundant in wet meadows and pastures than in other places. Mankind are also not unfrequently attacked by them.

The *Green-eyed* species often torment mankind. Those persons who are accustomed to walk in shady lanes, and in woods, during the hot weather of June and July, know well what it is to suffer from their attacks.

OF THE GNATS.

THESE insects principally frequent woods and watery places, and, in many parts, are known to the country people by the name of *Midges*. They live by sucking the blood and juices of the larger animals.

Their *larvæ* are very common in stagnant waters. The bodies of these are composed of nine segments, the last of which is furnished with a small cylindrical tube, through which they breathe; and they frequently rise to the surface of the water for that purpose. The head of the *chrysalis* is bent towards the breast, so as to throw the thorax in front: in this the respiratory tubes are situated, near the head. The last segment of the abdomen terminates in a kind of flat fin, by means of which the creature performs all its motions in the water.

THE COMMON GNAT.

Few insects are better known than this species of Gnat, and there are not many that afford a more interesting history.

The female deposits her eggs on the surface of the water, and surrounds them with a kind of unctious matter, which prevents them from sinking; and she at the same time fastens them with a thread to the bottom, to prevent them from being floated away from a place, the warmth of which is proper for their production, to any other where the water may be too cold, or the animals their enemies, too numerous. In this state, therefore, they resemble a buoy that is fixed by an anchor. As they come to maturity they sink deeper; and at last, when they leave the egg, they creep, in the form of grubs, at the bottom.

It is impossible to behold and not admire the beautiful structure of the proboscis, through which the Gnat draws the juices that afford it

nourishment. The naked eye is only able to discover a long and slender tube, containing five or six spiculæ of exquisite fineness. These spiculæ, introduced into the veins of animals, act like the suckers of a pump, and cause the blood to ascend. The insect injects a small quantity of liquid into the wound, by which the blood is made more fluid. The Gnat, as it sucks, swells, grows red, and does not quit its hold till it has gorged itself. The liquor it has injected causes a disagreeable itching, which may in some degree be removed by volatile alkali, or by immediately rubbing and washing the place with cold water.

THE MUSQUITO-FLY.

The Musquito-fly is nothing more than a large variety of the Common Gnat. These insects are found in great abundance in the woody and marshy parts of all hot climates; and, during the short summer throughout Lapland, Norway, and Finland, and other countries equally near the Pole.

It is the female only that bites and sucks the blood; and this operation is so severe, as to swell and blister the skin in a violent manner and sometimes even to leave obstinate sores.

The lowest class of people, in all the climates where Musquitoes abound, keep them out of their huts, during the day-time, by burning there a continual fire: the Laplander, when in bed, has a better contrivance to defend himself from their stings. He fixes a leather thong to the poles of his tent, this raises his canvass quilt to a proper height, so that its sides or edges touch the ground. Under this he creeps and, passes the night in security. When Mr. Acerbi and his friends arrived in a cottage in the village of Killare, in Lapland, the first favor the women conferred on them, was to light a fire, and fill the room so full of smoke, that it brought tears from their eyes. This was done to deliver them from the molestation of the Musquitoes; and, as a means of effectual prevention, they made a second fire, near the entrance of the apartment, to stop the fresh myriads, which would otherwise have rushed in upon them from without. The buzzing of Musquitoes is so loud, as to disturb the rest of persons in the night, almost as much as would be done by their bite.

OF THE HIPPOBOSCÆ, OR SPIDER-FLIES.

The Hippoboscæ form a connecting link between the two-winged and the apterous insects. By some authors they have been denominated *mouches araignées*, or *spider-flies*, from a distant resemblance which some of them have to Spiders.

A few of the species are found in woods and marshy places; but the greater number of them infest the bodies either of quadrupeds or birds.

APTEROUS INSECTS.

THE Linnean order *Aptera*, comprises all such insects as are destitute of wings in both sexes.

OF THE TERMES TRIBE.

THE present tribe is arranged by Linnæus among the Apterous Insects: but it might with equal propriety have been inserted with the Neuroptera or Hymenoptera; for the males of most of the species, in a perfect state, have either two or four wings.

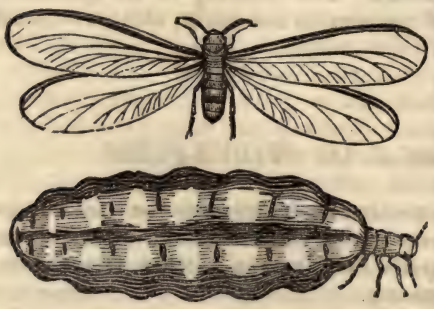
THE DEATH-WATCH TERMES.

In old wood, decayed furniture, museums, and neglected books, these insects are almost always to be found; and both the male and female, for the purpose of attracting each other, have the power of making a ticking noise, not unlike that of a watch.

The Death-watch Termes seem to have very little alliance to the following species.

THE WHITE ANTS.

The animals of this extraordinary community are found in the East Indies, and in many parts of Africa and South America, where their depredations are greatly dreaded by the inhabitants. They are naturally divided into three orders. 1. The working insects, 2. The fighters, or *soldiers*, which perform no other labor than such as is necessary in defence of the nests; and 3. The winged or perfect insects, which are male and female, and capable of multiplying the species.



WHITE ANT.

The nests, or rather *hills*, of these Ants, (for they are often elevated

ten or twelve feet above the surface of the ground,) are nearly of a conical shape; and sometimes so numerous, as at a little distance to appear like villages of the negroes. Jobson in his history of Gambia, says, that some of them are twenty feet high, and that he and his companions have often hidden themselves behind them, for the purpose of shooting Deer and other wild animals. Each hill is composed of an exterior and an interior part. The exterior cover is a large clay shell, shaped like a dome, of strength and magnitude sufficient to enclose and protect the interior building from the injuries of the weather, and to defend its numerous inhabitants from the attacks of natural or accidental enemies.

When a breach is made, by an axe or other instrument, in any of the walls, the first object that attracts attention, is the behaviour of the soldiers or fighting insects. Immediately after the blow is given, a soldier comes out, walks about the breach, and seems to examine the nature of the enemy, or the cause of the attack. He then goes into the hill, gives the alarm, and, in a short time, large bodies of soldiers rush out as fast as the breach will permit. It is not easy to describe the fury that actuates these fighting insects. In their eagerness to repel the enemy, they frequently tumble down the sides of the hill, but quickly recover themselves, and bite every thing they encounter.

OF THE LOUSE TRIBE.

Lice live on animal juices, which they extract from living bodies by means of their sucker. The *larva* and *pupa* resemble the perfect insect.

The mouth in these animals is formed by a retractile recurved sucker, without a proboscis. There are no feelers, and the antennæ are about the length of the thorax. The abdomen is somewhat flattened; and the legs, which are six in number, are formed not for leaping, but for running and climbing.

THE COMMON LOUSE.

When we examine the human Louse with the microscope, its external deformity excites disgust. The forepart of its head is somewhat oblong, while the hind part is rounded. The skin is hard and transparent, with here and there a few bristly hairs. On each side of its head are two antennæ or horns, jointed, and covered with bristly hair; and behind these are the eyes, which are large and black. The neck is short, and the breast divided into three parts; on each side of which are three legs, armed at the end with small claws, by which the animal is enabled to lay hold of different objects. The trunk, or proboscis, is generally concealed in its tube: this is very sharp, and furnished towards its upper part, with a few reversed

prickles. By means of this the Louse feeds; and, when it is engaged in sucking any animal, the blood may be seen, through the transparency of its external covering, to rush like a torrent into the stomach. Through the skin its stomach and intestines are visible, as well as the ramifications of the tracheæ or respiratory tubes, which appear dispersed, in a beautiful manner, throughout various parts of the animal.

Scarcely any creature multiplies so quickly as this unwelcome intruder. It has been asserted that a Louse becomes a grandfather in the space of twenty-four hours. This fact cannot be ascertained; but nothing is more true than that the moment the nit, which is no other than the egg of the Louse, gets rid of its superfluous moisture, and throws off its shell, it begins in its turn to breed. Nothing so much prevents the increase of this nauseous animal, as cold, and want of humidity.

OF THE FLEAS IN GENERAL.

THE mouth of these insects is without either jaws or feelers: it has only a long, inflected proboscis, which conceals a single bristle. The antennæ are beaded; the abdomen is compressed sideways; and the legs are six in number, and formed for leaping.

The *larvæ* are white, cylindrical, and without feet, but are very active little creatures. Under the tail there are two small spines. The *chrysalis* is motionless, but in appearance is not unlike the perfect insect. The two following species are all that have been yet discovered.

THE COMMON FLEA.

THE COMMON FLEA.

Notwithstanding the general disapprobation of this insect, it has certainly something pleasing in its appearance. When examined with a microscope, it will be seen to have a small head, large eyes, and two short, four-jointed antennæ, between which is situated the trunk, or proboscis. The body appears enveloped in a shelly armor, which is always clean and bright: this is beset at the segments with many sharp bristles. All the motions of this insect indicate agility and elegance; and its muscular power is so extraordinary as justly to excite our wonder. We know no animal whose muscular strength can be put in competition with that of a Flea; for, on a moderate computation, it is known to leap to a distance of at least two hundred times its own length.

There is no proportion between the power and the size of the insect tribes. Had man an equal degree of strength, bulk for bulk, with a Louse or a Flea, the history of Samson would no longer be

miraculous. A Flea will drag after it a chain a hundred times heavier than itself; and, to compensate for this power, will eat ten times its own weight of provisions in a day. Mr. Boverich, an ingenious watchmaker, who some years ago lived in London, exhibited to the public a little ivory chaise, with four wheels, and all its proper apparatus, and a man sitting on the box, all of which were drawn by a single Flea.

This little animal is produced from eggs which the females stick fast, by a kind of glutinous matter, to the roots of the hairs of cats, dogs, and other animals; or to the wool in blankets, rugs, or other similar furniture. Of these eggs the females lay ten or twelve a day, for several days successively; and they are hatched in the same order, five or six days after being laid.

From the eggs come forth, not perfect Fleas, but little whitish worms, or maggots, whose bodies have annular divisions, and are thinly covered with long hairs.

In eleven days from their being hatched, they cease to eat, and lie as though they were dying; but, if viewed in this state with a microscope, they will be found weaving a silken covering around them, in which they are to change into a chrysalid form. They continue nine days in this shape, at first white, and afterwards by degrees darkening their color as they acquire firmness and strength. As soon as they issue from their bag, they become perfect Fleas, and are able to leap away.

THE PENETRATING FLEA, OR CHIGOE.

This is a troublesome insect, too well known in many parts of this country. It is so small as to be almost imperceptible. Its legs have not the elasticity of those of Fleas; for, if the Chigoes had as great powers of leaping as Fleas, few creatures could escape their attack. They are always found among dust, and particularly in filthy places; they fix themselves on the legs, to the soles of the feet, and even to the fingers.

THE CHIGOE.

This creature pierces the skin so subtilely that the person is not sensible of the attack; nor is this to be perceived till the insect begins to extend itself. At first, it is not difficult to extract it; but, although it may only have introduced its head, it makes so firm a lodgment that a part of the skin must be sacrificed before it will quit its hold.

"The Chigoe," says Stedman, "is a kind of small Sand-flea, common in Surinam, which gets in between the skin and the flesh without its being felt, and generally under the nails of the toes: where, while it feeds, it keeps growing till it becomes of the size of a large pea, causing no further pain than a disagreeable itching. In process of time its operation appears in the form of a small bladder, in which are deposited thousands of eggs or nits, and which, if it breaks, produce so many young Chigoes, that in course of time create running

ulcers, which are often of very dangerous consequence to the patient; so much so, indeed, that he knew a soldier, the soles of whose feet were obliged to be cut away before he could recover; and some men have lost their limbs by amputation; nay, even their lives, by having neglected, in time to root out these abominable vermin. The moment, therefore, that a redness and itching, more than usual, are perceived, it is time to extract the Chigoe that occasions them. This is done with a sharp-pointed needle, taking care not to occasion unnecessary pain, and to prevent the Chigoe, or bladder, from breaking in the wound. Tobacco ashes are put into the orifice, by which, in a little time, the sore is perfectly healed."

OF THE TICKS IN GENERAL.

THESE troublesome insects live chiefly on other animals: some of them, however, inhabit the water, and others subsist on various vegetable substances. They are to be found every where, and in immense numbers. The *larvæ* and *chrysalids* have each six feet.

Their mouth is not furnished with a proboscis, but the sucker has a two-valved, cylindrical sheath. They have two compressed feelers, as long as the sucker; two eyes, one on each side of the head; and eight legs.

THE CHEESE-MITE.

To the naked eye, these minute creatures appear little more than moving particles of dust; but on the application of the microscope they are found to be perfect insects, performing all the regular animal functions.

THE CHEESE-MITE.

The females, which are easily distinguished from the males, are oviparous. The eggs are so minute, that on a tolerably accurate calculation it appears, that *ninety millions* of them would not fill the shell of a pigeon's egg.

Mites are very quick-sighted; and when once they have been touched with a pin, it is easy to perceive a great degree of cunning exerted to avoid a second touch. They are extremely voracious animals, and are often observed even to devour each other; and so very tenacious are they of life, that they have been kept alive many months between two concave glasses, by which they were applied to a microscope.

THE DOG-TICK.

In thickets and heaths these Ticks are sometimes very abundant. Hence it is that animals which frequent such places, and particularly dogs of the chase, are much exposed to their attacks.

Their abdomen is quite flat and thin when they have been long without nourishment; but, when adhering to the body of an animal, they soon fill themselves with blood, and their size then becomes so much enlarged, that any one unacquainted with their habits and appearance, would scarcely recognise them.

Their motions are extremely slow and heavy, but, in compensation for this apparent defect, they are able to adhere closely and strongly even to the most solid bodies. They are very tenacious of life; and their skin is so hard and tough, that they are not easily susceptible of injury. Long after they are deprived of their head, they give indications of remaining life.

In the destruction of these insects, mercurial preparations have been employed with success.

OF THE SPIDERS IN GENERAL.

THESE insects, which are so remarkable, on account of their industry and manners of life, are generally viewed with an aversion only to be accounted for by the unpleasing impressions that are made upon us in early life. These impressions are, in general, communicated by persons ill-qualified to give the mind that direction which is necessary for the purposes of life. Even many naturalists have complained that this aversion has deterred them from observing and accurately examining the habits of these insects; and those who have undertaken to do so, have generally been at much trouble to overcome their antipathy.

Spiders prey on other insects, and do not, in all cases, spare even their own species. There is little doubt but their bite is venomous: and it is said that a fly which has once felt it can never be recovered, but soon dies in convulsions. Many of the species have been swallowed, without any subsequent inconvenience.

Some of the Spiders spin webs for the purpose of catching their prey; but others seize it by surprise. They are all able to sustain an abstinence from food for a great length of time; some for even six months or upwards.

They frequently change their skins. The *larvæ* and *pupæ* have each eight legs, and differ in no respect from the perfect insect.

THE HOUSE-SPIDER.

The abdomen of these insects is nearly oval, of a brown color, and marked with five black and almost contiguous spots.

House-spiders feed principally on flies; and the web by which they are enabled to entangle these insects is a surprising part of the animal economy. For the purpose of forming this web, they are supplied with a quantity of glutinous matter contained in a receptacle near the extremity of their bodies; and, for spinning it into thread, they have

five teats, the orifices of which the insects have the power of contracting and dilating at pleasure. When they enter on the construction of this curious fabric, they fix on a spot apparently calculated both for plunder and security. The animal then distils one little drop of glutinous liquor, which is very tenacious; and creeping along the wall, and joining its thread as it proceeds, it darts itself to the opposite side, where the other end is to be fastened. The first thread thus formed, being drawn tight and fixed at each end, the Spider runs on it backward and forward, still doubling and strengthening it, as on this depends the stability of the whole. The scaffolding thus completed, it makes a number of threads parallel to the first, and then crosses them with others: the clammy substance of which they are formed serves, when first made, to bind them to each other. At the bottom of the web a kind of funnel is constructed, in which the little creature lies concealed. In this den of destruction it watches with unremitted assiduity till its prey is entangled; when this is the case it instantly darts upon its victim and deprives it of life.

HOUSE-SPIDER.

The webs of Spiders differ from those woven by any human artist in this circumstance: in our work, the threads extended in length are interlaced with those that are carried on transversely; whereas, the threads of a Spider's woof only cross the threads of the warp, and are glued to them in the points where they mutually touch, and are not either inserted or interwoven.

The threads along the border of the work are doubled or trebled, by the Spider's opening all her teats at once, and gluing several threads one over another; sensible that the extremity of the web ought to be hemmed and fortified, in order to preserve it from being torn. She likewise further secures and supports it with strong loops, or double threads, which she fixes all around it, and which hinder it from being the sport of the winds.

From time to time she finds it necessary to clear away the dust, which would otherwise incommode her web, and she sweeps the whole by giving it a shake with her paw; but in doing this she so nicely proportions the force of the blow to the strength of the work, that nothing is ever broken.

From all parts of the web are drawn several threads, which terminate, like rays in a centre, at the place of her concealment. The vibration of any of these threads is communicated to her, and gives her notice whenever there is game in the net, and accordingly she springs upon it in an instant. She derives another advantage from this retreat under her web; she there feasts on her prey in full security. It also gives her the power of concealing the carcasses, and not leav-

ing in the purlieus any traces of her barbarity, capable of intimating the place of her retreat, and inspiring other insects with a dread of approaching it.

This Spider is furnished with a pair of sharp hooked fangs, enclosed, when at rest, in cases in the fore-part of her head. With these weapons, (which a good glass will discover to have a small slit or orifice in each point,) she seizes and pierces such insects as entangle themselves in her web; and infuses a poisonous liquid into the wound. This poison must be very deleterious; for flies, and many other insects, may be mutilated by depriving them of their legs, wings, and even cutting their bodies through the very middle of the abdomen, and in that condition they will survive several days; but this liquid in a moment kills them.

When two Spiders of the same size meet in combat, neither of them will yield: they hold each other by their fangs so fast, that, in general, one of the two must die before they are separated.

The Spider, the Ptinus, and many insects of the beetle kind, exhibit an instinct of very extraordinary nature. When put in terror by a touch of the finger, the Spider runs off with great swiftness; but if he find that, whatever direction he takes, he is opposed by another finger, he then seems to despair of being able to escape, contracts his limbs and body, lies motionless, and counterfeits every symptom of death. "In this situation," says Mr. Smellie, "I have pierced Spiders with pins, and torn them to pieces, without their indicating the slightest marks of pain. Some Beetles, when counterfeiting death, will suffer themselves to be gradually roasted, without moving a single joint."

When the House-spider changes its skin, which it does at certain seasons, an opening may be seen in the belly. Through this it draws all its limbs, and leaves the old covering hanging to the cord that sustained it during the operation.

The eyes of all the Spiders are placed on the upper part of their head, but in various positions. These have no muscles, and are therefore immovable. They also consist of only one lens each, and do not, as in other insects, possess the faculty of multiplying objects; but their number and situation enable the animals to see perfectly well in all necessary directions.

THE GARDEN-SPIDER.

The body of this Spider is brown and somewhat downy. On the thorax are four furrows, of which the two middle ones diverge towards the head. The abdomen, which is nearly spherical, has, from the middle to the extremity, three white lines.

The labor of the Garden-spider, is very different from that of the former species; yet it is not performed with less art. When desirous of flitting from one place to another, this animal fixes one end of a thread to the place where she stands, and then with her hind paws, draws out several other threads from the nipples, which being lengthened, and driven by the wind to some neighboring tree, or other

object, are by their natural clamminess, fixed to it. As soon as the Spider finds that these are fastened, she makes of them a bridge, on which she can pass and repass at pleasure. This done, she renders the thread thicker, by spinning others to it. From this thread she often descends, by spinning downward to the ground. The thread formed by the latter operation she fixes to some stone, plant, or other substance. She reascends to the first thread, and at a little distance from the second begins a third, which she fixes in a similar manner. She now strengthens all the three threads, and, beginning at one of the corners, weaves across, and at last forms a strong and durable net, in the centre of which she places herself, with her head downward, to wait for her prey.

THE GARDEN SPIDER.

From its having been frequently remarked that Spiders spread their webs in solitary and confined places, to which it is sometimes difficult for flies to penetrate, M. de Vaillant concluded that these creatures must often remain long without food, and that, consequently, they were capable of enduring considerable abstinence. To ascertain the truth of this circumstance, he took a large Garden-spider, whose belly was about the size of a nut, enclosed it under a glass bell, which he secured with cement round its bottom, and left it in this situation ten months. Notwithstanding this deprivation of food, the insect appeared during the whole time equally vigorous and alert; but its belly decreased, till at last it was scarcely larger than the head of a pin. He then put under the bell to it another Spider of the same species. For a little while they kept at a respectful distance from each other, and remained motionless; but presently the meagre one, pressed by hunger, approached and attacked the stranger. It returned several times to the charge; and, in these different conflicts, deprived the stranger of almost all its claws: these it carried away to its former situation, to devour. The meagre Spider had likewise lost three of its own claws, on which also it fed, and M. Le Vaillant perceived that, by this repast, its plumpness was in some degree restored. On the following day, the new comer, deprived of all its means of defence, fell a complete sacrifice. It was speedily devoured; and in less than twenty-four hours, the old inhabitant of the bell became as plump as it was at the first moment of its confinement.

THE WANDERING SPIDER.

The color of the Wandering Spider is reddish brown, darker on the thorax than the abdomen. This part has, on each side, towards the top, a blackish line, or a brown spot. The two anterior legs, which are long, have blackish rings. The four hind legs are very short.

The Wandering Spider, which is very common on plants, does not

lie in wait for its prey, like several others: it is a lively and active hunter. Its head is furnished, as in the rest, with immovable eyes. Without any motion of the head, it perceives all the flies that hover around: it does not alarm, but stretches over them its arms, furnished with feathers, which prove nets that entangle their wings. The Spider seizes them between its merciless claws, and instantly sucks their blood.

In its general form, as well as in its manner of running, the Wandering Spider has much the appearance of a small crab. It carries its eggs enveloped in a small bag of whitish silk.

THE WANDERING SPIDER.

THE WATER-SPIDER.

This singular little creature is a very common inhabitant of our fresh waters. When in the water, its belly appears as if covered with a silver varnish. This, however, is nothing more than a bubble of air, attached to the abdomen by the oily humors which transpire from the body, and prevent the immediate contact of the water. By means of this kind of bubble, the insect forms its dwelling under the water. It fixes several silky threads to the stalks of water-plants, and then, ascending to the surface, thrusts the hinder part of its body above the water, drawing it back with so much rapidity, as to attach beneath a bubble of air, which it has the art of detaining below, by placing it under the threads above mentioned, and which it bends, like a covering, almost round it. It then again ascends for another air-bubble, and thus proceeds till it has constructed an aërial apartment under the water, which it enters into or quits at pleasure. The male constructs for himself one near that of the female, and afterwards breaks through the thread walls of the female's dwelling; and the two bubbles, attached to the bellies of both, unite into one, forming one large chamber.

The female takes care of the young-ones, and constructs similar apartments for them.

The figure of this Spider has in it nothing remarkable; and the insect may be overlooked among a crowd of curiosities, if the spectator be unacquainted with its singular art of constructing an aërial habitation under water, and thus availing itself of the properties of both elements. It lodges, during the winter, in empty shells, which it dexterously closes with a web.

THE TARANTULA.

THE TARANTULA.

This spider is somewhat more than an inch in length. The breast and belly are of an ash-color. The legs are likewise ash-colored, with blackish rings on the under part. The fangs are red within.

The Tarantula Spider is a native of Italy, Cyprus, Barbary, and the East Indies. This animal lives in fields, and its dwelling is in the ground, about four inches deep, half an inch wide, and closed at the mouth with a net. These spiders do not live quite a year. They lay about seven hundred and thirty eggs, which are hatched in the spring. The parents never survive the winter. Inflammation, difficulty of breathing, and sickness, are said to be the invariable consequences of the bite of this insect.

OF THE SCORPION TRIBE.

Scorpions may be considered as the most malignant and poisonous of all known insects. Their poison is emitted through three very small holes in the sting, one on each side of the tip, and the other on the upper part. In California there is a species, the *Scorpio Americanus*, which is eaten by the inhabitants.

These animals prey on worms and insects, and frequently even on one another. Their offspring are produced from eggs, of which one female lays a considerable number, After their appearance, they seem to undergo no further change than perhaps casting their skin from time to time, in the same manner as spiders.

THE COMMON SCORPION.

THE SCORPION.

This like other Scorpions, has a distant resemblance in shape to the Lobster, but it is infinitely more ugly. The head appears, as it were, jointed to the breast; and the mouth is furnished with two jaws; the under one of which is divided into two, and the parts, notched into each other, answer the purpose of teeth in breaking the food. On each side of the head there is a four-jointed arm, terminated by a claw, somewhat like that of a Lobster. The belly is divided into seven segments, from the lowest of which the tail commences: this, in the present

species, is armed with a hard, pointed, and crooked sting, the poison of which is very powerful.

In some parts of Italy and France these animals are among the greatest pests that can plague mankind; but in those countries of the East, where they grow to a foot in length, there is no removing a piece of furniture, without danger of being stung by them. There, we are told, they are nearly as large as small Lobsters.

Many experiments have been made to ascertain the strength of their poison; and, in warm climates, it has uniformly been found fatal to small animals. To man the wound is extremely painful. The place becomes inflamed, and the surrounding parts often turn livid, and require to be carefully dressed in order to prevent mortification.

OF THE CRAB TRIBE.

ALL the animals of this tribe have their bodies covered with a hard and strong shell. The head is united to the thorax or breast without any joint.

These animals live chiefly in the sea; some, however, inhabit the fresh waters, and a few live on land. They feed variously, on aquatic or marine plants, small fish, molluscæ, or dead bodies. The females carry their ova under their tail, which, for that purpose, is in general, much broader than that of the males.

The animals emphatically denominated *Crabs*, have a short, flat tail, bent close to the body in a hollow between the legs. The *Hermit-crabs* have a soft tail, without any crustaceous covering: this they fit into empty shells, or hollow stones. In the *Lobsters* the tail is the principal part of the body, being a very strong member, and employed with great advantage both in swimming and leaping. This is formed of six convex segments, which lie over each other, somewhat like the tiles of a house, and are terminated by five laminæ, or thin plates. The former are united by loose membranes, which admit of much motion. At the angle where the upper and lower parts join, these segments are furnished with a kind of crustaceous fins, bordered with hair, and consisting of several articulations, called by naturalists *pedes natatorii*. The fins are moved, backward and forward, and a little outward and inward, by small muscles, contained within each articulation. By means of these it is that the animals have their progressive motion at different depths in the water.

Most of the Crabs have eight legs, (a few, however, have six, or ten,) besides two large claws, which serve the purposes of hands. They have two eyes, situated on tubercles projecting from the head, and movable in any direction. When the extremities of these are viewed with a glass, they are found to be composed of a multitude of lenses, like the eyes of insects. For a sense of touch, these animals are furnished with antennæ, and palpi, or feelers. They have likewise a heart, with arterial and venous vessels, and branchiæ or gills for respiration. Their jaws are transverse, strong, and numerous; and the stomach is furnished with internal teeth.

THE LAND-CRAB.

LAND-CRAB.

Land-crabs are natives of the Bahamas, and of most of the other islands between the tropics. They live in the clefts of rocks, the hollows of trees, or in holes which they dig for themselves in the mountains. About the months of April and May in every year they descend in a body of some millions at a time, to the sea-coast, to deposit their spawn, and at this season the whole ground seems alive with them. They march in a direct line to their place of destination, and are said seldom to turn out of their way on account of intervening obstacles. Even if they encounter a lofty wall, or a house, they will attempt to scale it. If they arrive at a river, they wind along the course of the stream. They march very slowly, being sometimes three months or upward in gaining the shore.

When arrived at the coast, they prepare to cast their spawn; for this purpose they go to the edge of the water, and suffer the waves to wash twice or thrice over their bodies. They then withdraw, in order to seek a lodging upon land. In the mean time the spawn is extruded in a bunch from the body, and adheres to the under parts of the tail. This bunch becomes as large as a hen's egg, and exactly resembles the roe of a Herring. In this state they again, for the last time, seek the shore, and shaking off the spawn into the water, leave it to the heat of the sun, to be brought to maturity. About two-thirds of the eggs are devoured by the fish which annually frequent the shores in expectation of this prey. Those that escape are hatched under the sand; and, not long after this, millions of the little Crabs may be seen quitting the shore, and slowly travelling towards the mountains.

The old ones, in their return, are feeble, lean, and so inactive, that they are scarcely able to crawl along; and their flesh at this time changes its color. Many of them are obliged to continue in the level parts of the country till they recover, making holes in the earth, which they block up with leaves and dirt. In these they cast their old shells, and continue nearly motionless for six or seven days, when they become so fat as to be delicious food. After this they march slowly back to the mountains.

THE COMMON, OR BLACK-CLAWED CRAB.

The most remarkable circumstance in the history of these animals, is the changing of their shells and broken claws. The former, is done once a year, and usually between Christmas and Easter. During the operation they retire among the cavities of the rocks and under great stones; and Dr. Darwin (from the authority of a friend who had been

engaged in surveying the sea-coasts) says, that a hard-shelled Crab, always stands sentinel, to prevent the sea-insects from injuring the rest in their defenceless state; and that, from his appearance, the fishermen know where to find the soft ones, which they use for baits in catching fish; adding that, though the hard-shelled Crab, when he is on duty, advances boldly to meet the foe, and will with difficulty quit the field, yet at other times he shows great timidity, and is very expeditious in effecting his escape: if, however, he be often interrupted, he will, like the

COMMON CRAB.

CRAB FISHING.—FISHERMEN EXAMINING THE CRABS OR CRAB POTS.

Spider, pretend to be dead, and will watch an opportunity to sink himself into the sand, keeping only his eyes above.

When the claw of a Crab is bruised, it bleeds, and the animal seems,

by its motions, to experience much pain. For a while it moves it from side to side; then holding it perfectly steady in a direct position, the claw on a sudden gives a gentle crack, and the wounded part drops off; not at the joint, as might be imagined, but in the smoothest part of the limb.

Crabs are naturally quarrelsome, and frequently have serious contests, by means of those formidable weapons, their great claws. With these they lay hold of their adversary's legs; and wherever they seize, it is not easy to make them forego their hold. The animal seized has,

IMPLEMENTS EMPLOYED IN CRAB-FISHING. *a.* CRAB POT. *b.* LOBSTER POT. *c.* WELL BOX.

therefore, no alternative but to leave part of the leg behind in token of victory.

A fisherman, by irritation, made a Crab seize one of its own small claws with a large one. The animal did not distinguish that it was itself the aggressor, but exerted its strength, and soon cracked the shell of the small claw. Feeling itself wounded, it cast off the piece in the usual place, but continued with the great claw for a long time afterward.

Fishermen say that Crabs will live confined in a pot or basket for several months, without any other food than what is collected from the sea-water, and that even in this situation they will not decrease in weight.

THE HERMIT CRAB.

Having no shell to any part but its nippers, the Hermit Crab supplies by art what is denied to it by nature: for, taking possession of the deserted shell of some other animal, it occupies that, till, by becoming too large for its habitation, it is under the necessity of changing it.

THE HERMIT CRAB.

It is curious enough, in some countries, to observe this animal busily parading the sea-shore, along that line of pebbles and shells, which is formed by the furthest wave; still, however, dragging its old incommodious habitation at its tail, unwilling to part with one shell, even though a troublesome appendage, till it can meet with another more convenient. It stops first at one shell, turns it, passes by; then goes to another, contemplates that for a while, and, slipping its tail from the old habitation, tries on the new one. If this be found inconvenient, it quickly resumes the old one. It thus frequently changes, till at length it finds one that is light, roomy and commodious. To this it adheres, though the shell be sometimes so large as to hide both the body and claws of the animal.

But many trials and many combats are sometimes to be sustained by the Hermit Crab, before he is thus equipped: for there is often a contest between two of these animals for some favorite shell. They both endeavor to take possession. They strike with their claws, and bite each other, till the weakest is compelled to yield. The victor then takes possession, and, in his new acquisition, parades backward and forward on the strand, before his envious antagonist. These Crabs feed on small marine animals of various kinds.

THE LOBSTER.

These animals are extremely prolific. Dr. Baster says he counted twelve thousand four hundred and forty-four eggs under the tail of a female Lobster, besides those that remained in the body unprotruded. They deposit these eggs in the sand, where they are soon hatched.

Like the rest of their tribe, they are said annually to cast their shells. Previously to putting off their old shell, they appear sick, languid, and restless. They acquire an entirely new covering in a few days; but during the time that they remain defenceless, they seek some lonely place, lest they should be attacked and devoured by such of their brethren as are not in the same weak condition.

At the same time that they cast their shell, they change also their

stomach and intestines. The animal, while it is moulting, is said to feed upon its former stomach, which wastes by degrees, and is at length replaced by a new one.

THE LOBSTER.

Like some of the Crabs, these animals are said to be attached to particular parts of the sea.

The pincers of one of the Lobster's large claws are furnished with knobs, and those of the other are always serrated. With the former it keeps firm hold of the stalks of submarine plants, and with the latter it cuts and minces its food very dexterously. The knobbed or numb claw, as the fishermen call it, is sometimes on the right, and sometimes on the left side, indifferently. It is more dangerous for a person to be seized by the cutting claw than the other; but, in either case, the quickest way of getting disengaged from the creature, is to pluck off its claw.

In the water these animals are able to run nimbly upon their legs or small claws; and, if alarmed, they can spring, tail foremost, to a surprising distance, almost as swiftly as a bird can fly. The fishermen can see them pass about thirty feet, and, by the swiftness of their motion, it is supposed that they may go much further. When frightened, they will spring from a considerable distance to their hold in the rock; and, what is not less surprising than true, will throw themselves into their hold in that manner, through an entrance scarcely sufficient for their bodies to pass.

The circumstance of Lobsters losing their claws at thunder-claps, or the sound of cannon, is well authenticated; and the fishermen are often jestingly threatened with a salute by the sailors. The restoration of claws thus lost may always be observed; for these never again grow to their former size. When the claws of Lobsters become inconvenient to the animals, from being injured, they always break them off.

THE PRAWN, AND SHRIMP.

Prawns are chiefly found among sea-weed, and in the vicinity of rocks at a little distance from the shore. They seldom enter the mouths of rivers. Their usual mode of swimming is on their backs; but when threatened with danger, they throw themselves on one side, and spring backward to very consderable distances. They feed on all the smaller kinds of marine animals, which they seize and devour with great voracity. In their turn, they are the prey of numerous species of fish; although the sharp and serrated horn in front of their head constitutes a very powerful weapon of defence against the attacks of all the smaller kinds.

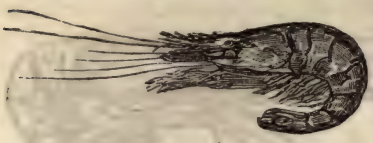
Being in great request for the table, these are eagerly sought for by fishermen, who catch them either in osier baskets, similar to those employed in catching Lobsters, or in a kind of nets, called *putting nets*. These, which are well known to all frequenters of the sea-coasts, are five or six feet in width, and flat at the bottom; and are pushed along in the shallow water, upon the sandy shores, by a man who walks behind. When fresh the color of the Prawn is somewhat cinerous; but, when boiled, it changes to a beautiful light red.

THE PRAWN, AND SHRIMP.

A SHRIMPER.

At the side of the head there is frequently to be observed a large and apparently unnatural lump. This, if examined, will be found to contain, under the thoracic plate, a species of crustaceous animal, which occupies the whole cavity, and there feeds, and perfects its growth.

The Shrimp is much smaller than the Prawn, and is by no means so much esteemed for the table as this. It frequents sandy sea-shores in great abundance, and not unfrequently enters harbors, and even the ditches and ponds of salt-marshes. Its habits and economy are, in most respects, similar to those of the Prawn.



THE SHRIMP.

THE COMMON, OR FRESH-WATER CRAW-FISH.

Craw-fish are found in many rivers, odged in holes which they form in the clayey banks; and their presence is generally esteemed an evidence of the goodness of the water. They are frequently caught by sticks split at the end, with a bait inserted in the cleft, and stuck in the mud at the distance of a few feet from each other. These sticks after remaining some time, are taken up, and generally with an animal adhering to each. They are gently drawn out of the mud, and a basket is put under them to receive the animals, which always drop off when brought to the surface of the water.

THE CRAW-FISH.

OF THE SCOLOPENDRÆ, OR CENTIPEDES.

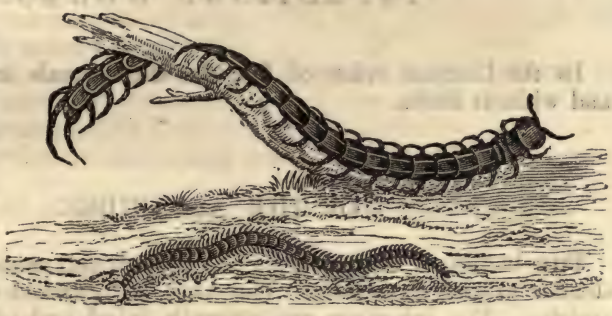
CENTIPEDES live chiefly on insects, and inhabit decayed wood, or hollows under stones. Those that frequent hot climates are large, and many of them are very venomous.

All the species have tapering antennæ, and two thread-shaped feelers united between the jaws. The body is long, depressed, and consists of numerous transverse segments, each of which is furnished with a pair of legs.

THE GREAT CENTIPEDE.

The Great Centipedes vary much both in size and color. Some of them are of a deep reddish brown, others of a yellow ochre color, livid yellow, or tinged with red; and they are sometimes seen more than a foot in length. Their legs terminate in very sharp hooks, or nails of a shining black color.

None of the insect tribe, the Scorpions excepted, are so formidable in appearance as the Centipede. It is found in the East and West Indies, and in various parts of Africa, inhabiting chiefly the woods, where it is preyed upon by the different species of snakes. It is, however, sometimes found in houses, and is said to be so common in particular districts, that the inhabitants are obliged to have the feet of their beds placed in vessels of water, in order to prevent their being annoyed during the night by these horrible reptiles.



THE CENTIPEDE AND MILLEPEDE.

Gronovius says, that all the legs of this animal are venomous; but its most formidable weapons are the two sharp and hooked instruments, that are placed under the mouth, with which it destroys its prey. At the extremity of each of these there is a small opening, through which it is supposed the Centipede emits the poisonous fluid into the wound inflicted by the fangs.

Leeuwenhoek, desirous of ascertaining some facts relative to the poison emitted by the Centipede, placed a large fly within the reach of one of these animals. He seized it between a pair of the middle feet, then passed it from one pair to the next, till it was brought under the fangs; which were plunged into its body, and it died instantly. M. St. Piere says, that, in the Isle of France, his dog was bitten by a Centipede upwards of six inches in length, and that the wound became ulcerous, and was three weeks in healing. He was highly diverted in observing one of these animals overcome by a vast number of Ants, that attacked it in conjunction, and, after having seized it by all its legs, bore it along, as workmen would have done a large piece of timber. The poison of the Centipede is not more injurious than that of the Scorpion, and seldom proves fatal to the larger animals.

Some of the American Indians eat Centipedes.

WORMS.

INTESTINAL WORMS.

In the Linnean order of *Intestina*, the animals are simple, naked, and without limbs.

OF THE ASCARIDES.

The bodies of these worms are cylindrical, semi-transparent, and slender at each extremity. The head is furnished with three small vesicles. The intestines are generally spiral, and of a whitish color.

Although these worms have long been known to inhabit the stomach and intestines of men and animals, their origin and history seem enveloped in great obscurity. The difficulty of making satisfactory observations, and the want of favorable circumstances under which to attend to them, have hitherto presented insuperable obstacles to an intimate knowledge of their habits and economy.

In structure they are very simple, for being intended to subsist on already digested food, they are not furnished with any complicated organs. The denomination of Ascaris has been given to them from the circumstance of their being almost constantly in motion.

Some of the species are oviparous, and others produce living offspring.

They are most abundant about the *ileum*, but they sometimes ascend into the stomach, and even creep out at the mouth and nostrils.

The motion of these worms is serpentine, and in no respect resembles that of the Earth-worm, with which they have sometimes been ignorantly confounded. The latter has the power of contracting and extending its body, whilst the length of the Ascaris is never diminished. The head is always thrown forward, by the worm curling itself into circles, and suddenly extending its head with considerable force.

They are very common in the intestines of children; and are sometimes found in the stomach. Their number exceeds all calculation, and they cause a most unpleasant sensation of itching, by piercing the skin in a slight degree, with their awl-shaped tails. Even newly-born children are not always free from them.

OF THE FASCIOLÆ, OR FLUKE-WORMS.

FLUKE-WORMS are often very numerous in the viscera of quadrupeds, birds, fishes, and reptiles. They are found in the stomach, the intestines, and the liver. Each individual has both the sexes united in itself. They are oviparous, and the ovaries are lateral.

Their body is oblong and flattish, and is furnished with two orifices, one of which is situated at the anterior extremity of the body, and the other at a little distance beneath it. The interior represents an intestinal canal, which, after passing round the body, folds upon itself, and terminates at the second orifice.

The livers of sheep which have fed in wet and marshy grounds, generally abound with these worms. The disease called the *rot*, is supposed to be occasioned by them.

OF THE TÆNIÆ, OR TAPE-WORMS.

TÆNIÆ are worms that inhabit the bodies of different animals, where they are destined to feed upon juices already animalized. They are generally found in the alimentary canal, and usually about the upper part of it, where there is the greatest abundance of chyle, which seems to be their natural food.

We are not to suppose that these Worms are created for the purpose of producing disease in the animals they inhabit: but rather, that Nature has directed that no situation should be vacant, where the work of multiplying the species of living beings could be carried on. By thus allowing them to exist in each other, the sphere of increase is considerably enlarged. There is, however, little doubt, that worms, and more especially those of the present tribe, do sometimes produce diseases in the bodies they inhabit; but we are at the same time very certain, that worms do exist abundantly in many animals, without disturbing their functions, or annoying them in the slightest degree; and we ought to consider all these creatures rather as the concomitants than the causes of disease.

The species of Tæniæ are not confined *singly* to particular animals; men are subject to several different species, and even the people of particular countries and climates are subject to particular species of them. The people of England have the *Tæniæ solium*, or Common Tape-worm, and rarely any other; the inhabitants of Switzerland the *Tæniæ lata*, &c.

These creatures are apparently possessed of few senses. Nothing resembling brain or nerves has been discovered in them; but, as they are highly sensible to stimuli, it is most reasonable to conclude, that they have a considerable portion of nervous matter in the composition of their bodies; that is, of such matter as is susceptible of stimuli. Indeed, we can scarcely imagine how any animal can even exist without such matter in its composition. Having no particular organs of

sense, the touch is therefore the only evident source of intelligence which they possess.

The mode of increase or propagation of Tæniæ, appears to be principally by ova; and there is reason to believe that these ova, as well as those of other intestinal worms, are so constructed, as not easily to be destroyed. From this circumstance, we may suppose them to pass along the circulating vessels of other animals. We cannot easily explain the phenomena of worms being found in the eggs of fowls, and in the intestines of a fœtus before birth, except by supposing their ova to have passed through the circulating vessels of the mother, and to have been by this means conveyed to the offspring.

OF THE FILARÆ, OR THREAD-WORMS.

THESE troublesome animals are found in the bodies of several kinds of quadrupeds, birds, and insects. Most of the species perforate the skin, immediately under which they lodge themselves; a few, however, have been discovered in the intestines. None of them have yet been found to infest the bodies of reptiles or fish.

THE FURY TRIBE.

OF this tribe only one species has hitherto been discovered. The body is linear, and of equal thickness throughout. It has on each side a single row of close-pressed reflected prickles.

In Finland, Bothnia, and the northern provinces of Sweden, says Linnæus, the people were often seized with an acute pain, confined to a mere point, in the face, or other exposed part of the body, which afterwards increased to a most excruciating degree, and sometimes, even within a few hours after its commencement, proved fatal. This disorder was more particularly observed in Finland, especially about marshy places, and always in the autumn. At length it was discovered, that the pain instantly succeeded something which dropped out of the air, and almost in a moment penetrated and buried itself in the flesh. On more acute examination, the Fury was detected as the cause. This little worm creeps up the stalks of sedge-grass and shrubs in the marshes, whence it is often carried off by the wind; and, if the naked parts of the skin of any person happen to be directly in its course, it immediately adheres and buries itself within.

OF THE GORDIUS, OR HAIR-WORM TRIBE.

THESE animals are inhabitants chiefly of stagnant waters. In their organization and structure they are extremely simple. Their bodies are round, thread-shaped, equal in thickness throughout, and smooth; and their interior consists of a canal, which extends from one extremity of the body to the other.

THE COMMON HAIR-WORM.

The popular name of this worm originated in the notion that it was produced from the hair of horses and other animals; a notion that is even yet prevalent among the common people. Its Linnean name of *Gordius* originated in the habit that it has of twisting itself into such peculiar contortions as to resemble a complicated Gordian knot. In this state it often continues for a considerable time, and then, slowly disengaging itself, extends its body to the full length.

It is common in our fresh waters, and particularly in such where the bottom is composed of soft clay, through which it is able to pass with great facility.

The Abbé Fontana kept a Hair-worm in a drawer for three years, at the expiration of which time it was perfectly dry and hard, and exhibited no signs of life; but, on putting it into water, it soon recovered its former vigor.

THE SEA LONG-WORM.

Such is the extreme length of these very extraordinary worms, that it is almost impossible to fix any bounds to it.

SEA LONG-WORM.

Some of the most intelligent of the fishermen, however, assert, that they are upwards of thirty yards in length; but Colonel Montagu is of opinion, that as many feet must be the utmost. None of the specimens which he saw appeared to exceed twenty feet.

The expansion and contraction of the Long-worms are very surprising. One of them, supposed to be nearly eight feet in length, was put alive into spirits, and it instantly contracted to about twelve inches, at the same time increasing to double its preceding bulk.

OF THE LUMBRICUS, OR EARTH-WORM TRIBE.

THE Earth-worms have a round, annulated body, with generally an elevated fleshy belt near the head. Most of the species are rough, with minute concealed prickles, situated longitudinally, and have in the body a lateral aperture or pore.

Some of these worms bore into the earth, others live in mud, and others in the sand of the sea-shores. They are furnished with numerous prickles, which are short, and curved backward. These aid their movements in the ground. Their bodies, likewise, are covered with a viscid matter, which transudes through numerous pores, and assists their progress.

The most insignificant insects and reptiles are of much more importance, and have much more influence in the economy of Nature, than the incurious are aware of; and, notwithstanding their minuteness,

they are mighty in their effects, from their numbers and fecundity. Dew-worms, in appearance, constitute a small and despicable link in the chain of Nature; yet, if this link were destroyed, it would make a lamentable chasm. For, to say nothing of the many species of birds and quadrupeds that are supported by them, worms seem to be the great promoters of vegetation. They bore, perforate, and loosen the soil, and render it pervious to rains and the fibres of plants, by drawing straws and stalks of leaves and twigs into it; and chiefly, by throwing up infinite numbers of lumps called worm casts, which form a fine manure for grass and corn.

Gardeners and farmers express their detestation of worms, the former, because they render the walks unsightly, and make them much work; and the latter, because they imagine that worms eat their green corn. But these men would find that the earth without worms would soon become cold, hard-bound, and void of fermentation; and consequently sterile. It should also be observed, that green corn, plants, and flowers, are not so much injured by worms, as by many species of insects in a larva state; and by unnoticed myriads of those small shell-less snails called slugs, which silently and imperceptibly make amazing havoc in the field and garden. Lands that are subject to frequent inundations are always poor; one great reason of this may be, because all the worms are drowned.

The body of the Dew-worm is formed of small rings, furnished with a set of muscles, which act in a spiral direction, and enable it, in the most complete manner possible, to penetrate into, or creep upon the earth. The motion of these creatures may be explained by a wire wound on a cylinder; where, when one end is drawn on and held fast, the other, if loosed, will immediately follow. These muscles enable them with great strength to dilate or contract their bodies. The annuli or rings are also each armed with small, stiff and sharp beards or prickles, which they have the power of opening out, or closing to their body. And under the skin is secreted a slimy matter, which they emit at the perforations between the rings, to lubricate the body, and facilitate their passage into the ground.

In winter these worms retire very deep into the earth, to secure themselves from being frozen. They do not become torpid during this season; for often, in the intervals of mild weather, they are observed to throw up their casts, in the same manner as at other times of the year.

OF THE LEECHES IN GENERAL.

THE body of the Leech is oblong and truncate, or appears as if it were cut off at both ends. These animals are cartilaginous, and move by dilating the head and tail, and contracting themselves into the form of an arch.

Some species are viviparous; others are oviparous, and lay their eggs on aquatic plants or carry them under their belly. Each egg contains many young ones. Several of the smaller kinds may be multiplied by cutting.

THE MEDICINAL LEECH, AND HORSE-LEECH.

This species of Leech is of an olive black color, with six yellowish lines above, and spotted with yellow beneath. It is generally two or three inches in length.

In stagnant ponds and ditches these animals are most commonly found. Their body is formed with numerous annular wrinkles, which they have the power of expanding or contracting at pleasure. The tail ends in a circular muscle or sucker, which, when applied to any substance, readily adheres, by the animals drawing up the middle, so as to have it pressed firmly down by the external air. By this it fastens itself with ease and security, while it extends the other part of its body in any direction; and it is so firmly fixed, that it can move its head about to seek for nourishment, without any danger of being carried away by the strength of the current. When the Leech is desirous of moving onward, it extends its body, fixes its head in the same manner that it did its tail; then loosens and draws that up; and again fastens it near its head, as a fresh point to proceed from.

LEECH

The head of the Leech is armed with three teeth, of a slightly cartilaginous substance, which are so situated as to converge when the animal bites, and leave a somewhat triangular mark on the skin. These teeth are sufficiently strong to pierce the skin of an ox or a horse. Through the holes it forms with them, it sucks the blood; this is done by contracting the muscles of the throat, so as to make the blood rush through the vacuum above the wound into the stomach, a kind of membranaceous receptacle, divided into twenty-four small cells. Here the blood remains, sometimes for months, and affords support to the animal during the whole time. It passes off by transpiration, the matter fixing on the surface of the body, and afterwards coming off in small threads. In proof of this, if a Leech be immersed in oil, (where it may be kept alive for several days,) and afterward put into water, a kind of slough will be seen to loosen from its skin, exactly of the shape of the body.

It is stated, that a large-sized Leech will generally draw about an ounce of blood. These animals will sometimes adhere so long, and become so much distended, as afterwards to die in consequence. They are, at any time, easily loosened from the skin, by putting upon them salt, pepper, or acids.

Horse-leeches are equally, if not more, abundant in ditches and stagnant waters, than the former species. They are so greedy of blood, that a vulgar notion is prevalent, that nine of them are able to destroy a horse. Medical men, in general, are cautious not to use them, from an opinion, though probably a groundless one, that their bite is noxious.

MOLLUSCOUS WORMS.

OF THE SLUGS IN GENERAL.

THE Linnean order *Mollusea* consists of all those simple animals which are without shells, and are furnished with tentacula or arms. The greater number of them ere inhabitants of the sea.

Few animals, for their size, are more voracious than these. They would do serious injury to our fields and gardens, were not their numbers abridged by several of the smaller quadrupeds, and by various species of birds.

They have so strong a tendency to reproduction, that, if the head or tail be cut off, these parts will grow again. Most of the species can exist for a great length of time, even for several months successively, without food.

THE SMALL GRAY SLUG, AND BLACK SLUG.

In moist gardens, meadows, fields, and woods, the former of these Slugs is but too common. Its time of going abroad in search of food is in the evening and night. During the day it lies concealed, either among the leaves of vegetables or under the surface of the ground. Its progress on the ground may be easily traced by the slime which it leaves in its track. Few animals are more destructive to vegetation than these.

THE BLACK SLUG.

These Slugs sometimes suspend themselves by a kind of thread, formed from the viscid substance which covers their bodies.

The *Black Slug*, or Snail, is a well-known inhabitant of our fields and meadows, during the summer season. The country people consider the appearance of this Slug as an indication of approaching rain; but this is rather to be accounted for by the moisture of the ground and of the plants. It is seldom indeed to be observed abroad during dry weather, for this would deprive the external parts of its body of the moisture which is requisite for its subsistence. The Black Slug feeds on the roots and leaves of different kinds of plants.

OF THE APLYSIA TRIBE.

THE species of Aplysia, are only three in number. One of them inhabits the European seas, another the shores of Barbary, and the third the coasts of America.

These animals respire water by means of branchiæ, which form a kind of tuft on the back, and which are covered with an operculum or lid.

OF THE AMPHITRITES.

THERE is no tribe of marine animals that exceed these in beauty. They inhabit tubes of a horny or tendinous substance, the greater part of which is buried in the sand, or mud, at the bottom of the sea. From the upper extremity of these tubes, they push out a great number of elegant tentacula, which are arranged about the mouth like rays from the centre of a circle.

The species are numerous; and several beautiful kinds have, of late years, been discovered to inhabit the English coasts.

OF THE NEREIS TRIBE.

THESE are all marine animals. They are very various in size; some are invisibly minute, and others are several inches in length. They have been denominated Marine Scolopendræ or Centipedes; and, in some respects, they bear a strong resemblance to these animals.

By numerous legs with which they are furnished, they are enabled to move about among submarine rocks and stones, with considerable agility. Under these they conceal themselves, and lie in ambush for their prey, which chiefly consists of minute worms of different kinds.

The *Night-shining Nereis.*—These minute creatures inhabit every sea; and are one of the causes of the luminous shining of the water in the night. They are found on all kinds of marine plants; but often leave them, and swim on the surface of the water. They are frequent at every season of the year, but particularly in summer, before stormy weather, when they become more agitated and more luminous than at at other times. So minute are they, that myriads of them may be contained in a small cup full of sea-water. Innumerable quantities of them lodge in the cavities of the scales of fishes; and to them, probably, the fish may, in some measure be indebted for their luminous quality.

OF THE ACTINIÆ, OR SEA-ANEMONES.

THESE animals are of a somewhat oblong form, and, when closed, resemble a truncated cone. They are fixed by the base; and from the

upper part of their body occasionally extend several tentacula, which are disposed in regular circles. The mouth is situated at the top, in the centre of the tentacula, and is furnished with crooked teeth.

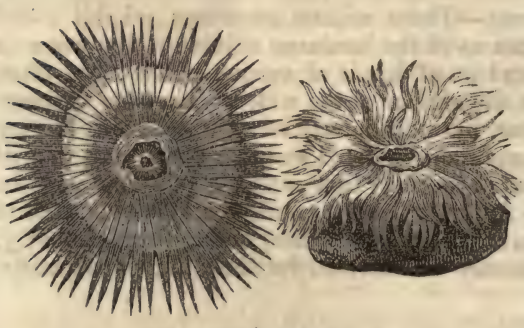
They are all capable of varying their figure; but, when their tentacula are fully expanded, they have the appearance of full-blown flowers. Many of them are of very beautiful and brilliant colors. They feed on shell-fish, and other marine animals, which they draw into their mouth by means of their arms; and they eject the shells and other indigestible parts through the same opening. It, however, sometimes happens, that a shell presents itself in a wrong position, and the animal is not able to discharge it in the usual manner: in this case, we are told that the shell is forced through the body, making a wound, as if with a knife, near the base. The arms of the Sea-anemones seem to lay hold of objects by making a vacuum; for on touching them with the fingers, they readily adhere, but no viscous matter is deposited by them. The mouth of these animals is capable of great extension, so as to allow them, without injury, to swallow very large shells. The whole interior of their body is one cavity or stomach. They have the power of progressive motion: but this is extremely slow, and is said to be performed by loosing their base from the rock, reversing their body, and employing their tentacula as legs.

Nearly all the animals of this tribe may be separated from the rocks by a card carefully introduced beneath, so as not materially to injure them; and, if put into glass vessels with sea-water, which must be changed about once a week, they will there fix themselves, and may be kept alive and in full vigor for a great length of time, even in places far distant from the sea-coasts.

All the species are viviparous.

THE COMMON, OR PURPLE SEA-ANEMONE.

On the submarine rocks of several of the European coasts, and on those of the British islands in particular, these animals are extremely abundant. They adhere by their base so firmly to the rocks, as frequently to be left above water at the ebbing of the sea: but they are generally found at a little depth below the surface. When closed, their form is that of a rounded cone, with an orifice at the top.



SEA-ANEMONES.

If kept in a vessel of salt-water, they will continue to live and flourish for a considerable length of time. It is, however, remarkable, that

when from want of the water being changed, they become unhealthy, they protrude their intestines at the mouth, and at length turn inside out, their mouth closing round the base. On renewing the water they will sometimes recover, and assume their natural shape and appearance.

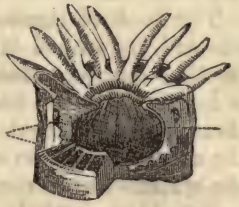
THE ROSE-COLORED SEA-ANEMONE.

On this species the Abbé Dicquemaire made several experiments to ascertain its power of production, and other remarkable properties. He first cut off all the tentacula: these grew again in less than a month; and, on repeating this apparently cruel operation a second and a third time, he had equal success. One of the animals had its upper part cut off: the base was found, a few days, afterward, to have fallen from its place, but it soon entirely recovered its limbs. After cutting one of these Anemones in two, the Abbé offered a piece of a muscle to the detached part, and the limbs seemed eager to take it. They drew it into the mouth, and it was swallowed; but, as the body was wanting to receive it, the piece came out at the opposite end; "just (says the Abbé) as a man's head, being cut off, would let out at the neck the bit taken in at the mouth." It was offered a second time, and again received and retained till the following day, when it was thrown up. In this manner it was fed for some time, the bits, when they did not pass through, appearing considerably altered on their re-appearance at the mouth. If the base of any of the Anemones happened to be injured by the incision, the wound generally proved mortal.

ANEMONE SEEN FROM ABOVE.

On being put under the receiver of an air-pump, and having the air exhausted, these animals did not seem to experience any ill-effects, nor to perceive any difference between this and their being in the open air: if their tentacula happened to be expanded, they remained so, and not the least shrinking could be perceived.

These animals are destitute of eyes, yet they are very evidently affected by light. If a candle be held over the glasses in which they are kept, and at such a distance as not to communicate any heat, they regularly close, and do not again expand until the light is removed.



SECTION OF ANEMONE.

OF THE SEPIA, OR CUTTLE-FISH TRIBE.

THE structure of these animals is very remarkable. Their body is cylindrical, and, in some of this species, entirely covered with a fleshy sheath; in others, the sheath reaches only to the middle of the body. They have eight tentacula or arms, and in general two feelers as they are called, which are much longer than the arms. Both the feelers

and arms are furnished with strong circular cups or suckers. The mouth of these animals is hard, strong, and horny, resembling, both in texture and substance, the beak of a parrot.

In the back under the skin, there is a kind of bone, composed of thin parallel plates, one above another, and separated by little columns, arranged in quincunx order. This bone is oval, thick toward the middle, and thin at the edge. It is extremely light, generally elastic, and, in the living animal, is transparent, like glass: the surface, in some species, is marked with longitudinal furrows.

THE OFFICINAL AND EIGHT-ARMED CUTTLE-FISH.

By means of the numerous circular cups or suckers with which the arms of both these species are furnished, they seize their prey, and firmly attach themselves to rocks or other hard substances. In order to do this, they apply the surface of the suckers, extended and plain, to the surface of the body to which they are about to adhere: then, drawing them up in the centre, by the muscles contrived for that purpose, a vacuum is formed, and they are fixed by the pressure of the external air. Their adhesive power is so great, that it is generally more easy to tear off the arms, than separate them from the substance to which they are fixed. If the arms happen to be broken off, they are soon afterwards re-produced.

THE CUTTLE-FISH.

The beak of these animals is so strong and powerful, that they are enabled, by means of it, to break in pieces the shells of limpets, and of other marine testaceous animals, on which they feed.

In the belly not only of these, but of all other species of Cuttle-fish, there is a vessel that contains a quantity of dark or inky fluid, which the animal emits, on contraction, when alarmed. This not only tinges the water so as to conceal its retreat, but is at the same time so bitter, as immediately to drive off its enemies.

Swammerdam was of opinion, that Indian ink was this black fluid in an inspissated state, with the addition of perfumes. If Indian ink be, in any considerable quantity, dissolved in water, it acquires, in a few days, a very high degree of putridity, clearly indicating its being formed of some animal substance; and no other seems so well calculated to compose it as this.

The Officinal Cuttle-fish has in its body a bone, which, when dried and pulverized, is employed by silversmiths for moulds, in which they cast their small work, such as spoons, rings, &c. It is also converted into that useful article of stationery, called pounce. This bone, on account of its lightness, is sometimes called sea-foam, or sea-biscuit.

This species was held in great esteem by the ancients as food, and

it is even yet used as such by the Italians, and the inhabitants of other countries on the shores of the Mediterranean.

The Eight-armed Cuttle-fish, in hot climates, sometimes becomes of such size, as to measure twelve feet across its centre, and to have each of its arms between forty and fifty feet long. When the Indians go out in their canoes, in places frequented by these animals, they are always in dread of their flinging their arms over and sinking them; on which account they are careful to take with them an axe, to cut them off.

OF THE ASTERIAS, OR STAR-FISH TRIBE.

THESE are inhabitants of the sea, and are usually found on the sand, or among the rocks on the sea-shore, considerably below high-water mark. Their covering is a coriaceous crust, which defends them from the attacks of the smaller animals; and they have five or more rays proceeding from a centre, in which their mouth is situated. Every ray is furnished with a prodigious number of tentacula, or short, soft, and fleshy tubes, which appear to be of use not only in taking prey, and in aiding the motion of the animal, but also in enabling it to adhere to rocks and other substances, by which it withstands the force of the waves. In a single animal the tentacula have been found several hundred in number; and, when the Star-fish are thrown on their backs, these are frequently pushed out and withdrawn, in the same manner as snails do their horns. The progressive motion of the Star-fish, which is performed by the undulation of their rays, is very slow. They possess considerable powers of reproduction; for, if a ray happens to be broken off, a new one, in the course of a short time, will appear. The mouth is armed with bony teeth, that are used in seizing and breaking the shells on which the animals feed; and from the mouth a canal extends to each of the rays, runs through the whole length, and becomes gradually narrower as it approaches the extremity.

THE STAR-FISH.

If a Star-fish be drowned in brandy or spirits of wine, and the rays be kept flat and expanded, it is easy afterwards to extract, by a pair of forceps, the stomach and intestines through the mouth. This information may be of use to persons who wish to preserve specimens of these animals.

THE COMMON, OR FIVE-RAYED STAR-FISH.

In a large animal of this species, which I kept by me for some time alive, there were more than four thousand tentacula on the under sides of the rays. These the creature frequently retracted, and again pushed out, as a snail does its horns; and by means of them, it was enabled firmly to adhere to the dish of salt-water in which it was kept. Whenever I touched the tentacula with my finger, all those of that

ray or limb were gradually withdrawn, but those of the other rays were not in the least affected by it.

It is stated, that these animals, which are extremely common in some seas, feed on oysters, and are consequently very destructive to them. This, however, if it relate to full-grown oysters, must be incorrect, as, when alive, the Star-fish are so soft and tender, that an oyster, in closing upon them, would either cut off their limb, or, at least, would injure it to such a degree, that when it next opened its shell, the animal would be glad to make its escape. Besides, the mouth of the Star-fish being in the centre of the under part of its body, I know not in what manner this could possibly come in contact with food defended by two such large and powerful shells as those with which the oyster is furnished. It has been said, that the tentacula are of use in taking this prey; but this, from their nature, must be entirely fabulous.

THE COMMON STAR-FISH.

THE ARBORESCENT STAR-FISH.

This extremely singular species is occasionally found in most seas, but never in great numbers. It has five equi-distant, thickly-jointed processes, which proceed from its centre, each divided into two small ones, and each of these into two others still smaller; and this regular subdivision is continued to a vast extent, and, in the most beautiful gradation of minuteness, till at length the number of extreme ramifications sometimes amounts to several thousands. One specimen, that measured three feet across, had five hundred and twelve extremities to each ray; so that the whole number was two thousand five hundred and sixty. By this most curious structure, the Arborescent Star-fish becomes as it were a living net, and by the sudden contraction of its innumerable ramifications, it is capable of catching such creatures as are destined for its prey; and the unfortunate object of attack is secured by these, beyond all possibility of escape.

MEDUSA, OR ARBORESCENT STAR-FISH. *a*. UNDER SURFACE. *b*. SIDE VIEW.

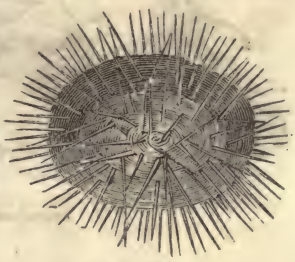
When it is alive, or but just dead, the color of the Arborescent Star-fish is reddish or deep carnation; but, on being dried, it becomes somewhat gray. It should be dried in the shade, in some open place, where the wind has free access to it: for in the sun it is apt to dissolve, and if placed to much in the shade it will become putrid.

OF THE ECHINUS, OR SEA-URCHIN TRIBE.

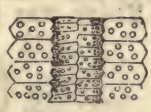
THE Sea-urchins are generally round, and shaped like a somewhat flattened ball. Their exterior is a bony crust, usually furnished with movable spines, by which they are defended from injury, and by means of which they have their progressive motion: these are often very numerous, amounting, in some species, to upwards of two thousand. The mouth is placed beneath, and, in most of the species, has five valves. They are all inhabitants of the sea.

THE COMMON, OR EATABLE ECHINUS.

The spines with which the shell of this animal is covered, are the instruments by which it conveys itself at pleasure from one place to another; and by means of these it is enabled to move at the bottom of the water with great swiftness. It generally employs those about the mouth for this purpose, keeping that opening downward; but it is also asserted to have the power of moving forward, by turning on itself like a wheel. When any thing alarms these animals, they immediately move all their spines toward the object, and wait an attack, as an army of pikemen would with their weapons. The number of muscles, fibres, and other apparatus necessary to the proper management of these, are very great, and exceedingly wonderful. So tenacious are the Sea-urchins of the vital principle, that, on opening one of them, it is no uncommon circumstance to observe the several parts of the broken shell move off in different directions. The Ancients, according to Oppian, gave credence to a circumstance much more wonderful than this.



THE SEA-URCHIN.



THE SEA-URCHIN.

In Marseilles, and some other towns on the continent of Europe, this species of Echinus is exposed for sale in the markets, as oysters are with us, and is eaten boiled like an egg. It forms an article of food among the lower class of people who reside in the neighborhood of the sea-coasts of many parts of France, but does not seem to have made its way to the tables of the opulent. The Romans adopted it as food, and dressed it with vinegar, mead, parsley, and mint.

TESTACEOUS WORMS, OR SHELL-FISH.

THE Linnean order *Testacea*, comprises all those Molluscous Worms which are covered with calcareous shells.

MULTIVALVES.

OF THE LEPAS, OR BERNACLE TRIBE.

THE shells are fixed at the base by a long and flexible kind of neck, and consist of more than two unequal and erect valves. The animal that inhabits them is similar to one which inhabits submarine rocks, and which Linnæus has placed among the *Mollusca* under the name of *Triton*.

BERNACLES.

THE GOOSE-BEARING BERNACLE.

There was formerly a strange notion prevalent concerning these shells, that from them was bred a species of goose, common in some parts of England, called the Bernacle Goose.

GOOSE-BEARING BERNACLE.

To the bottoms of ships, and to pieces of floating timber, these Bernacles are sometimes seen adhering in countless numbers. Colonel Montagu observed a piece of fir timber, more than twenty feet long, which was drifted on the coast of Devonshire, and which, from end to end, was completely covered with them. They appear particularly to attach themselves to wood, where they cluster together of all sizes, the smaller adhering, by short pedicles, to the larger ones.

The animals contained in these shells as well as in those of all

the other species, have each twenty-four claws or tentacula, all joined in pairs near the bottom, and inserted into one common base. The twelve longest stand somewhat erect and arched, and arise from the back part of the animal. They appear like so many yellow curled feathers, clear, horny, and articulated. Every joint is furnished with two rows of hairs on the concave side. They are of use in catching prey, and the animals are continually employed in extending and contracting them for this purpose.

The twelve smallest tentacula are placed, six on each side, in front of these. They are more pliable and more thickly set with hairs than the others, and seem to perform the office of hands. The mouth, formed not unlike a contracted purse, is in front, between the smaller tentacula; and within its folds are situated six or eight horny laminæ or erect teeth. Under this lie the stomach and intestines, and the tendons, by which the animal adheres to the shell.

OF THE TEREDO TRIBE.

THERE are not more than four known species of Teredo. Of these, two are found in holes, which they perforate in wood; a third, in the seed-vessels of a plant which grows in the East Indies, and called, by Linnæus, *Xylocarpum Granatum;* and the fourth, (the Gigantic Teredo,) in mud at the bottom of the ocean, on the coast of the island of Battoo, near Sumatra. The shells of the latter are sometimes between five and six feet in length.

These animals were formerly arranged with the more simple of the univalve shells, but their proper place is certainly among the multivalves.

THE SHIP-WORM

Great numbers of these destructive worms, which are supposed to have been introduced from India into Europe, are sometimes found in the sides and bottoms of ships. By means of their hard and cutting jaws, they are able to penetrate into any timber, except such as is of an extremely hard and compact substance. They, however, bore as seldom as possible across the grain; for, after they have penetrated a little way, they turn, and continue with the grain tolerably straight, until they meet with another shell, or knot. Their course then depends on the nature of the obstruction: if this be considerable, they prefer making a short turn back, in form of a syphon, rather than to continue for any distance across.

OF THE PHOLAS TRIBE.

THE animals of this tribe, while very young, perforate clay, spongy stones, and wood; and, as they increase in size, they enlarge their habitation within, and thus become imprisoned. They are always

found below high water mark, and a mass of rock may sometimes be seen wholly perforated by them. They have two orifices, or openings, capable of elongation in the manner of a proboscis: one of these is supposed to be the mouth, and has the faculty of spouting water. Most of them contain a phosphorescent liquor, of great brilliancy in the dark, which also illuminates whatever it touches or happens to fall upon.

From the following species, the character of nearly the whole tribe may be collected.

THE DACTYLE PHOLAS.

The very extraordinary powers possessed by these animals, of penetrating into solid bodies, when compared with their apparent imbecility, have justly excited the astonishment of philosophers and naturalists in all ages. When divested of their shells they are roundish and soft, and seem destitute of any instrument fitted for boring into stones. They are, indeed, each furnished with two teeth; but these are placed in such a situation as to be incapable of touching the hollow surface of their stony dwellings. They have also two corners to their shells, that open and shut at either end; but these are totally unserviceable to them as miners. The instrument with which they perform all their operations, and by means of which they bury themselves in the hardest rocks, is a broad fleshy substance, somewhat resembling a tongue. With this soft, yielding instrument, while yet young and small, they work their way into the substance of the stone, and enlarge their apartment as their increasing size requires.

Furnished with the bluntest and softest augur imaginable, it effects, by slow successive applications, what other animals are incapable of performing by force, and penetrates the hardest bodies with only its tongue. When, while yet small, it has effected an entrance and buried its body in the stone, it there continues, for life, at its ease; the sea-water that enters at the little aperture, supplying it with luxurious plenty. On this seemingly thin diet it by degrees grows larger, and soon finds itself under the necessity of increasing the dimensions of its habitation and its shell.

The motion of the Pholas is slow, almost beyond conception, its progress keeps pace with the growth of its body; and, in proportion as it becomes larger, it makes its way further into the rock. When it has penetrated to a certain depth, it turns from its former direction and hollows downward; till at last, when its habitation is completed, the whole apartment resembles the bowl of a tobacco-pipe; the hole in the shank being that by which the animal entered.

Thus immured, the Pholas lives in darkness, indolence, and plenty: it never removes from the narrow mansion into which it has penetrated; and seems perfectly content with being enclosed in its own sepulchre. The influx of the sea-water that enters by its little gallery satisfies all its wants. These animals are found in immense numbers at Ancona, in Italy.

BIVALVES.

OF THE MYA TRIBE.

THE shell, in most of the species, is gaping at the end. The hinge is furnished with a strong, thick, and broad tooth, not inserted into the opposite valve.

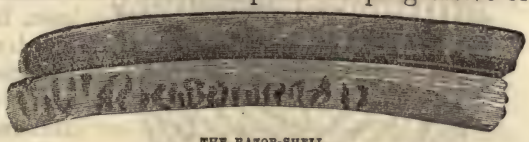
Most of these animals are inhabitants of the ocean, but some of them are found in fresh water. They perforate the sand or mud at the bottom, where many of the species are caught for food, and others for the pearls which are formed within their shells. Some few of the species perforate and live in limestone, in the same manner as the pholades.

OF THE SOLEN, OR RAZOR-SHELL TRIBE.

THESE animals in general reside in holes, which they form in the sand at the bottom of the ocean. Their position in these holes is always upright. In situations where they are exposed to the air by the ebbing of the tide, their place is easily known to fishermen, by a small dimple which they leave on the surface. Some of the species live in stone. Nearly all of them are used as food.

THE COMMON, AND THE SCABBARD RAZOR-SHELL.

Many of the bivalved shell-fishes have the power of progressive or retrograde motion, by an instrument that has some resemblance to a leg or foot, and called the *tongue*. But these animals can, at pleasure, make this tongue assume almost every form which their exigencies require.



THE RAZOR-SHELL.

Like all the other species of Razor-shells, they are incapable of progressive motion on the surface; but they dig a hole or cell in the sand, sometimes two feet in depth, in which they can ascend or descend at pleasure. The instrument by which their motions are performed, is fleshy, cylindrical, and situated near the centre of their body. When necessary, the animals can make the termination of the tongue assume the form of a ball. The Razor-fish, when lying on the surface of the sand, and about to sink into it, extends its tongue from the

inferior end of the shell, and makes the extremity of it take the form of a shovel, sharp on each side, and terminating in a point. With this instrument the animal cuts a hole in the sand. After the hole is made, it advances the tongue still further into the sand, makes it assume the form of a hook, and with this hook, as a fulcrum, it obliges the shell to descend into the hole. In this manner the animal operates until the shell totally disappears. When it chooses to regain the surface, it forms the termination of the tongue into the shape of a ball, and makes an effort to extend the whole tongue; but the ball prevents any further descent, and the muscular effort necessarily pushes the shell upward, until it reaches the surface. It is amazing with what quickness and dexterity these seemingly awkward motions are performed.

It is remarkable that the Razor-fish, though it lives in salt water, seems to abhor salt. When a little salt is thrown into the hole, the animal instantly quits its habitation. But it is still more remarkable, that, if the animal be once seized with the hand, and afterwards allowed to retire into its cell, salt will then be strewed in vain, for the fish will never again make its appearance. If it be not handled, the animal, by an application of salt, may be made to come to the surface as often as a person pleases; and fishermen sometimes make use of this stratagem as a means of catching it.

OF THE CARDIUM, OR COCKLE TRIBE.

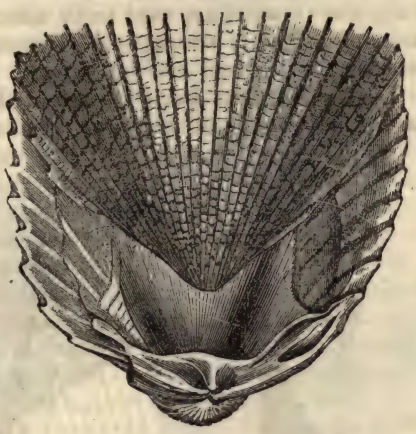
On sandy shores of almost all the known seas, some of the species of Cockle are to be observed. Most of them are found immersed in the sand, at the depth of a few inches. Their size is various, from five or six inches to half an inch in diameter. In a fossil state these shells are by no means uncommon; and species corresponding with some of them inhabit the Indian Ocean.

CARDIUM CLOSED.

The shell is bivalve, equivalve, convex, and in most of the species, longitudinally ribbed. The hinge has two teeth near the beak, and a larger one placed remote on each side, locking into the opposite valve.

THE COMMON COCKLE.

All the locomotive powers of these well-known animals are concentrated in the triangular yellow foot, which is so conspicuous when we open the shells. This foot is not only capable of great inflection, but also of seizing with its point the glutinous matter which proceeds from it, drawing this into threads, and thereby, in some measure, securing the animals within the sand which they inhabit.



CARDIUM OPENED.

Few of our shell-fish are more common, in inlets and bays near the mouths of rivers, than these. In such situations they are usually found immersed at the depth of two or three inches in the sand, the place of each being marked by a small, circular, depressed spot.

OF THE OYSTER TRIBE.

Oysters are bivalve shell-fish, having the valves generally unequal. The hinge is without teeth, but furnished with a somewhat oval cavity, and mostly with lateral transverse grooves.

There are few tribes of shell-fish more numerous or more generally dispersed over submarine rocks and sands, in all parts of the world, than these. The greater number of them are wholesome and extremely palatable food.

From a similarity in the structure of the hinge, the Oysters and Scallops have been united into one tribe. But they differ very essentially, both in their habits and external appearance. The oysters adhere to rocks, or, as in two or three species, to roots of trees on the shore; while the Scallops are always detached, and usually lurk in the sand.

THE COMMON OYSTER, AND GREAT SCALLOP

It is the nature of Oysters in general to have their lower valve fixed to rocks or loose stones, and frequently even to each other. Some of them, however, are loose; these have very thin shells, and are more regularly shaped than the others.

The principal breeding-time of Oysters is in the months of April and May, when they cast their spawn, or *spats* as the fishermen call them, upon rocks, stones, shells, or any other hard substance that happens to be near the place where they lie; and to these the spats immediately adhere. From the spawning-time till about the end of July, the Oysters are said to be sick; but by the end of August they become perfectly recovered. During these months they are out of season, and are bad eating.

The Oyster has been represented, by many authors, as an animal destitute not only of motion, but of every species of sensation. It is

FLEET OF OYSTER BOATS.

able, however, to perform movements which are perfectly consonant to its wants, to the dangers it apprehends, and to the enemies by which it is attacked. Instead of being destitute of sensation, Oysters are even capable of deriving some knowledge from experience. When removed from situations that are constantly covered with the sea, they open their shells, lose their water, and die in a few days. But, when taken from similar situations, and laid down in places from which the sea occasionally retires, they feel the effect of the sun's rays, or of the cold air, or perhaps apprehend the attacks of enemies, and accordingly learn to keep their shells close till the tide returns. Oysters breathe by means of gills. They draw the water in at their mouth, a small opening in the upper part of their body, drive it down a long canal that constitutes the base of the gills, and so out again, retaining the air that is requisite for the functions of the body.

The Great Scallop.—The Scallop has the power of progressive motion upon land, and likewise of swimming on the surface of the water. When this animal happens to be deserted by the tide, it opens its shell to the full extent, then shuts it with a sudden jerk, often rising five or six inches from the ground. In this manner it tumbles forward, until it regains the water. When the sea is calm, it is said that troops or little fleets of Scallops are sometimes to be observed swimming on the surface. They raise one valve of their shell above the surface, which becomes a kind of sail, while the other remains on the water, and, by steadying the animal, and thus preventing its being overset, answers the purpose of a keel. When an enemy approaches, these animals instantly close their shells, plunge to the bottom, and the whole fleet disappears. By what means they are enabled to regain the surface, we are totally ignorant.

SCALLOP.

Scallops are frequently sold for the table; and, in some parts of Europe, are much esteemed.

OF THE MUSCLES IN GENERAL.

THE Muscle tribe is distinguished by the shell being bivalve, without any tooth in the hinge, but in having the hinge marked with a longitudinal hollow line; and by the animal's being generally fixed to some substance by a byssus or silky beard.

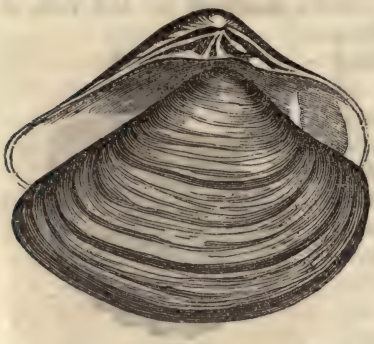
Some of the Muscles penetrate into the interior of calcareous rocks, where they reside out of the reach of danger. Others adhere by their beards to the exterior of rocks or stones; and so tenacious is their hold, that, in the larger species, they cannot be separated without considerable exertion. One species is gathered from the depths of the sea, on account of the *pearls* which are found within its shells.

THE COMMON, OR EDIBLE MUSCLE.

By the silky threads which it forms from its body, this species adheres to rocks, both in the European and Indian seas; but it grows to a much larger size between the Tropics than in the northern climates.

All the muscles have, for an instrument of motion, a tongue or foot, capable of considerable elongation, and also of being shortened into the form of a heart. This is marked with a longitudinal furrow, and is completely enveloped in a sheath formed of transverse and circular fibres, of an obscure purple color. When the animal is inclined to

change its place, it thrusts the foot out of the shell, and raises itself on its edge; then, by extending this forward, it uses it as a kind of arm, drawing the body up to it, and thus it proceeds until it has found a convenient situation. If the Muscle be inclined to continue at the spot to which it has removed, the instrument of its motion is put to a very different employment; it is now employed in spinning those silky threads which fix it firmly to the spot, and which, like a ship at anchor, enable it to brave all the agitations of the water. All this it accomplishes by seizing with its point the gluten that is supplied by a gland situated under its base, and drawing it out, through the furrow, into threads. When the Muscle is thus fixed, it lives upon the little earthy particles, or upon the bodies of such smaller animals as the water transports to its shells.



MUSCLE.

These Muscles are generally esteemed a rich and wholesome food; but to some constitutions they occasion disorders, the symptoms of which are great swellings, eruptions of blotches or pimples, shortness of breath, convulsive motions, and sometimes even delirium. A remedy that has been recommended is two spoonsfull of oil and one of lemon-juice, (or about two of vinegar,) shaken well together, and swallowed as soon as any of the symptoms take place. This unwholesome quality has been attributed to a small species of crab, the *Cancer pisum* of Linnæus, that is sometimes found within the shells. It seems, however, not to have its seat in anything essential to the Muscle; for, when illness of this kind has been occasioned, some persons have been affected, and others have not, who have eaten at the same time, and at least in equal quantity.

THE PEARL MUSCLE.

The Pearl is a calculus or morbid concretion, which is produced not only in these, but sometimes even in the common oysters, muscles, and other shells. It is found both in the body of the animal, and within the shells, on the outside of the body.

The principal fishery for pearls is on the coast of Tinneveley in Eastern Hindostan, where the natives find them of such commercial importance, as to employ in the fishery several hundreds of small vessels. The pearls are taken at two seasons of the year, in March and April, and again in August and September. They do not, however, fish every year; for if, upon trial, they do not find the pearls sufficiently valuable, they abstain until the ensuing season, in order to allow them time to increase their size.

A cord is fastened round the arms of the divers, and held by the

persons in the boat; and, to accelerate their descent, the divers have a perforated stone, of eighteen or twenty pounds weight, tied by a cord to their great toe. Each of them is also furnished with a sack, which has the mouth distended by a hoop. They then descend, and, on reaching the bottom, slip off the stone, which is drawn up, and fill their sack with shells. When this is full, they give a signal, by pulling the rope, and they are then drawn up by the men in the boats.

PEARL OYSTER, OR MUSCLE.

The depth of water in which this fishery is carried on, is twenty or thirty yards, and the distance from the shore four or five leagues. When the men are drawn up, they rest eight or ten minutes, to recover their breath, and then plunge in again; and a succession of men continue this slavish employment for ten or twelve hours every day. The shells are left in vast heaps to putrefy, until the season is over. The gains of the adventurers are often small, as the success is very precarious. Great pearls are seldom found; and the generality of what are taken, are of the smaller kind, called Seed Pearls, which are sold by the ounce, to be converted into powder.

The *shells* are found adhering to the coral banks. Numbers of Sharks lurk about the diving-places, and often devour the poor adventurers.

PEARL DIVER.

OF THE PINNA TRIBE.

Few tribes of shell-fish have been more celebrated, even from the remotest periods of antiquity, than these. They are usually found in the sand or mud, in an erect position, with their larger end a little open. In this position they are firmly fixed, by means of a fine and strong byssus or silk, the fibres of which are agglutinated to the gravel, sand, roots of marine plants, broken shells, and other extraneous substances.

The animals of many of the species are used as food, and are in great request for the table.

THE SEA-WING.

They inhabit a gravely bottom, covered with mud and long sea-weeds, and are only to be approached at particular times, when the sea recedes further than usual.

They stand upright, with their broad end about an inch above the surface, and the lower end fixed by a large and strong byssus, which is so firmly attached to the gravel, that it requires some force to draw them; up and, even when dragged out, the byssus is usually left behind. This beard is composed of numerous fine, silk-like fibres, of a dark purplish brown color, and two or three inches in length.

Many of these shells are caught annually, the animals being accounted a very palatable food; but they require at least five or six hours stewing, in order to render them eatable; if this be properly attended to, they are nearly as good as Scallops, but they are never so tender.

According to Aristotle, the byssus of the ancients was the beard of one of the species of Pinna; but the name seems to have been used indiscriminately by other writers, for any spun material that was esteemed finer or more valuable than wool. Reaumur remarked that the threads of the byssus are as fine and beautiful as silk. The Pinna on the coasts of Italy and Provence, (where it is fished up by means of iron hooks fixed on long poles,) is called the silk-worm of the sea. The stockings and gloves that are manufactured from the byssus which is there collected, are of exquisite finenes, but are too warm for common wear.

The Pinna, observes Col. Montagu, has long been celebrated for giving protection to a small species of crab, which was supposed to be of use to it, by giving it notice either of approaching danger, or of the presence of its prey. Respecting this circumstance, many stories have been handed down to us from the earliest times These, although not wholly unfounded, are mixed with too much fable to be fully credited in this enlightened age.

UNIVALVES.

OF THE ARGONAUTS IN GENERAL.

THE animals of the Argonaut tribe, have a near alliance to the Sepiæ or Cuttle-fishes. The shells are spiral, involute, of a white substance, and so thin, as almost to resemble paper. They have each only a single cell, and are not to be confounded with the Chambered or Pearly Nautili, which belong to a different class, and bear very little resemblance to the shells of the present, either in their structure or habits.

THE PAPER NAUTILUS, OR ARGONAUT.

This was the famous *Nautilus* of the ancients; and, in the early ages of society, it is supposed to have furnished the original idea of navigation. When this little animal means to sail, it discharges a quantity of water from its shell, by which it is rendered lighter than the surrounding medium, and of course rises to the surface. Here it extends two of its arms upward. These are each furnished at their extremity with an oval membrane, which serves as a sail. The other six arms hang over the sides of the shell, and supply the place of oars and rudder.

ARGONAUT.

In some places, when the sea is not agitated by winds, great numbers of these singular creatures may occasionally be seen diverting themselves by sailing about in this manner; but as soon as a storm arises, or any thing gives them disturbance, they retract their arms, take in as much water as, with the weight of their body, renders them heavier than the medium in which they swim, and sink to the bottom.

These animals are found in the Mediterranean, the Indian Ocean, and in the neighborhood of the Cape of Good Hope.

OF THE CYPRÆAS, OR COWRIES.

THESE shells are univalve, involuted, of a somewhat ovate shape, obtuse, and smooth. The aperture is linear, extended through the whole length of the shell, and dentated on both sides. The animal is a *Limax*, or Slug.

There is no tribe of shells which, on the whole, are more beautiful than these. From their high polish and brilliant colors, they have derived the name by which they are most commonly known in France, of *Porcelaines*. The species are very numerous. In uncivilized countries, several of them are worn as ornaments, both by men and women; and some of them are worn as amulets or charms against disease.

They reside in the sand at the bottom of the sea, and are furnished with a membrane, which is so extensive, that they are able to throw it over their whole shells, and thus to preserve them always pure and polished. These animals have two horns; and the canal by which they respire is situated on the top of their head.

THE TIGER, AND MONEY COWRY.

There are few shells of the present tribe more common in collections, and at the same time more beautiful, than the former of these species. It is found both in the Indian and Adriatic seas. The latter are well known on almost all the coasts of Africa and India, where they are employed by the natives in commerce, instead of money, about two thousand of them being esteemed equal in value to a rupee. The negro women, it is stated, fish for them usually three days before or after the full moon; and, at the Maldivian Islands, thirty or forty vessels are annually laden with them, for exportation into Africa, Bengal, Siam, and other countries, for the purposes of commerce.

MONEY COWRY.

Of the Cowries, a very remarkable fact has been stated by M. Bruguière, that when the animals find their shells too small for the increased dimension of their body, they quit them, and proceed to the formation of new ones of larger size, and consequently better adapted to their wants.

OF THE BUCCINUM, OR WHELK TRIBE.

THE shell is univalve, spiral, and gibbous. The aperture is ovate, and ends in a short canal or gutter, which bends to the right. The animal is a *Limax*, or Slug.

The situations in which the animals of the present tribe are chiefly found, are submarine rocks, stones, and weeds. To these they adhere so firmly, as not easily to be loosened, either by the waves or the currents of the ocean. A few of them are of large size. Their shells are peculiarly thick and strong; and some of the larger kinds were anciently employed as trumpets, by the sound of which armies were summoned to battle.

WHELK.

OF THE HELICES, OR SNAILS.

THE All-wise Author of Nature has denied to these animals the use of feet and claws, to enable them to move from place to place; but he has made them ample amends, in a way more commodious to their habits and mode of life, by a broad skin along each side of the belly, and the power of motion which this skin possesses. By this motion they are enabled to creep, and by the skin, assisted by the glutinous slime emitted from their body, they adhere securely even to the smoothest surfaces.

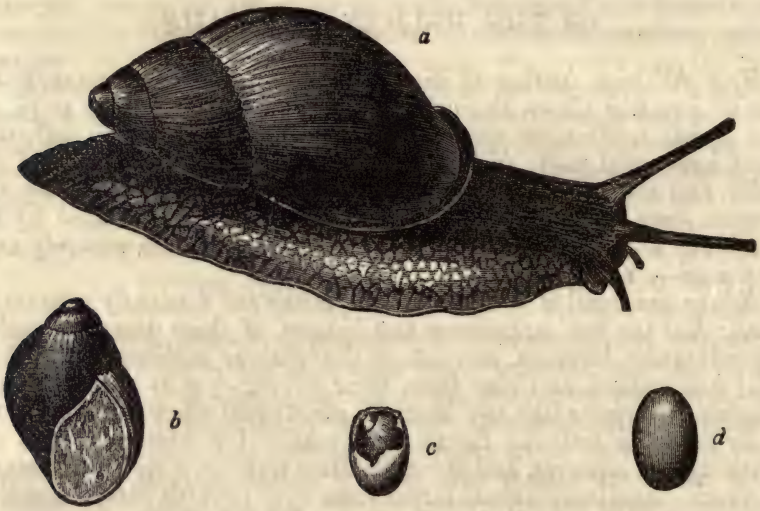
When the Snail is in motion, four horns are distinctly seen on its head; but the two uppermost and longest of these deserve peculiar consideration, both on account of the various motions with which they are endued, and also from their having eyes at their summits. These eyes appear like two blackish points, and when taken from the body are of a bulbous figure. They have but one coat; and the vitreous, the aqueous, and the crystalline humors, may be discovered in them. Snails are able to direct these eyes towards different objects at pleasure, by a regular motion out of the body; and sometimes they hide them, by a very swift contraction into the belly. Under the smaller horns, is the animal's mouth, and, though the substance of this may appear too soft to be furnished with teeth, yet it has no fewer than eight. With these it chews leaves and other substances, seemingly harder than any part of its own body; and with them it sometimes bites off even pieces of its own shell.

From various experiments that have been made on Snails, it appears that they are possessed of considerable powers of reproduction. Spallanzani found that their heads might be cut off, and that, in a certain time, other heads would be formed.

THE GARDEN-SNAIL, HEDGE-SNAIL, AND GROVE-SNAIL.

The mode of breeding, in this and a few other species of Snails, is extremely curious. At a certain time of the year, they meet in pairs, and stationing themselves an inch or two apart, they launch at each other several little darts, not quite half an inch long. These

are of a horny substance, and sharply pointed at one end. The animals, during the breeding season, are furnished with a little reservoir for them, situated in the neck, and opening on the right side. After the discharge of the first dart, the wounded Snail immediately retaliates on its aggressor by ejecting at it a similar one: the other renews the battle, and in turn again is wounded. Thus are the darts of Cupid, metaphorical with all the rest of creation, completely realized in snails. After the combat they come together. Each of them lays its eggs in some sheltered and moist situation, generally under a little clod of earth, or in some cool cavity. The eggs are about the size of small peas, semi-transparent, and of a soft substance. From these the young ones are hatched completely formed with shells



SNAIL. *a*. ADULT ANIMAL IN MOTION. *b*. A YOUNG SHELL. *c*. EGG SHELL JUST BROKE. *d*. EGG UNBROK

on their backs; and they undergo no further change than what necessarily takes place in the gradual increase of their size.

The depredations which these animals commit in gardens and orchards are very considerable; and it is remarkable, that in defect of moist and succulent food, such as fruit and tender leaves, they will attack even substances of a dry and hard nature. A common Garden-snail, when confined for a single night, under a glass more than four inches in diameter, and placed on a sheet of common blue paper, has been known to devour the whole paper contained within the included space, to the very edge of the glass, so that a circular piece seemed almost as neatly taken out, as if it had been marked by a pair of compasses.

The Snail, if its shell be broken, has a power of mending it. Even when apparently crushed to pieces, these animals will set to work: and, with the slimy substance which they force from their bodies, and which soon hardens, they in a few days close up all the numerous chasms. The junctures, however, are easily distinguishable; and the

whole shell, in some measure, resembles an old coat patched with new pieces. But, although the animal has the power of repairing its shell, it is not able to form a new one.

The following instances of tenacity of life in Snails, are well authenticated, and are probably without parallel in any other individuals of the animal creation.

Mr. Simon, a merchant of Dublin, whose father, a Fellow of the Royal Society, and a lover of natural history, left him a small collection of fossils and other curiosities, had, among them, the shells of some Snails. About *fifteen years* after his father's death, (in whose possession they had continued many years,) he gave to his son, a child about ten years old, some of these snail-shells to play with. The boy placed them in a flower-pot, which he filled with water, and the next day he put them into a basin. Having occasion to use this, Mr. Simon observed that the animals had come out of their shells. He examined the child respecting them; and was assured that they were the same which had been in the cabinet. The boy said he had a few more, and brought them. Mr. S. put one of these into water, and in an hour and a half afterwards, he observed that it had put out its horns and body, which it moved but slowly, probably from weakness. Major Vallancy, Dr. Span, and other gentlemen, were afterwards present, and saw one of the Snails crawl out, the remainder being dead, probably from their having remained some days in the water.

This shell was sent to Sir John Pringle, who exhibited it at a meeting of the Royal Society; but some of the members imagining that Mr. Simon must have been imposed upon, by his son having substituted fresh shells for those that had been given to him, the boy was examined by Dr. Macbride on the subject, and the Doctor declared that he could find no reason to believe that the child either did or could impose upon his father. Mr. Simon living in the heart of the city, rendered it almost impossible for the boy (if he had been so disposed) to collect fresh shells; for he was at that time confined to the house with a cold. Mr. Simon, moreover, declared, that he was positive those were the shells he gave to him, for he had in his cabinet many more of the same sort, and nearly of the same size.

After this account had been made public, there appeared in the Annual Register the following very singular narration. It was sent to the editors by a Mr. Rowe, and is stated to have been written by a lady, whose name he was not at liberty to mention.

"I was at Mr. Haddock's at Wrotham in Kent, and was making a little shell-work tower, to stand on a cabinet in a long gallery. After having repaired two small amber temples to grace the corners, I was desirous of having some ornament for the front; and sea-shells running short before I had finished, I recollected having seen some pretty little snails on the chalk-hills there: we consequently all went one evening to pick up some. On our return I procured a large china-basin, and putting a handful or two of shells into it, filled it up with boiling water. I poured off the first water, and filled the bowl again. I then carried it into a summer-house in the garden where I loved to work early in the morning, before my friends were stirring.

Next morning, how great was my surprise, on entering the summer-house, to find my poor snails crawling about, some on the edge of the basin, some tumbling over, some on the table, and one or two actually eating the paste that was to stick them on! I was perfectly shocked, burst into tears, and carefully picking up every snail, carried them into a field beyond the garden, where I make no doubt they perfectly recovered from their scalding."

THE ESCULENT SNAIL,

Is large and fleshy, and, when properly cooked, is not unpleasant to the taste.

At the commencement of winter, it carefully closes its shell with a thick white cover or operculum, attached to its body, that just fills up the opening, and in this enclosed state, it remains until the commencement of warm weather, seldom appearing abroad till about the beginning of April.

These Snails are at this day much admired in some parts of the Continent, and are not always used from economical motives; for at Vienna, but a few years ago, seven of them were charged the same price in the inns, as a plate of veal or beef. The usual modes of preparing them for the table, are by boiling, frying them in butter, or sometimes stuffing them with force-meat: but, in what manner soever they are dressed, their sliminess always remains. The greatest numbers, and the finest snails, are brought from Suabia.

Dr. Browne, who travelled to Vienna somewhat more than a century ago, remarks, that since the markets were so well supplied with other provisions, "he was surprised to meet with some odd dishes at their tables, such as Guinea-pigs, and divers sorts of snails and tortoises."

Dr. Townson was shown at Erlau, a snailery, which, the proprietor informed him, was constructed on an improved plan. In our island, he says, this might have had the denomination of a *Patent Snailery*, or *Philosophical Snail-sty*. It consisted only of a large hole, two or three feet deep, dug in the ground, having a wooden house as a cover. The animals were fed on the refuse of the garden, which was thrown to them.

There seems some doubt as to the original introduction of these snails into England. Mr. Pennant says, that we are indebted for them to Sir Kenelm Digby; and Da Costa, that in the last century, a Charles Howard, Esq., of the Arundel family, brought some of them from Italy, in the hope of rendering them an article of food in England; and, for this purpose, dispersed them about the woods and downs of Albury, an ancient seat of the family, near Boxhill in Surrey. They are now to be found in considerable numbers, not only there, but also in several parts of the confines of Sussex.

ZOOPHITES.

THE creatures that are ranked under the Linnean order *Zoophyta*, seem to hold a middle station between animals and vegetables. Most of them, deprived altogether of the powers of locomotion, are fixed by stems that take root in crevices of rocks, among sand, or in such other situations as nature has destined for their abode; these, by degrees, send off branches, till at length some of them attain the size and extent of large shrubs. The Zoophytes are usually considered under two divisions. The stony branches of the first division, which has the general appellation of *Coral*, are hollow, and full of cells, which are the habitations of animals resembling Polypes, Medusæ, &c., according to their respective genera. The next division consists of such animals as have softer stems, and are, in general, not merely inhabitants of a stem or branches, but are themselves in the form of a plant. Those of this division which are best known, are the Corallines, the Sponges, and the Polypes.

OF THE MADREPORES.

THE animals which inhabit the Madrepores are Medusæ. The coral which contains them is fixed and simple, or branched, with cavities composed of lamella in a star-like form.

The great variety of Madrepores, their conspicuous appearance in the water, and their astonishing quantity on some coasts, have caused them to be remarked by navigators and travellers, from the earliest periods. They are all composed of calcareous matter, united with a portion of animal substance. By calcination they yield an excellent lime.

In certain species, their substance is extremely hard and solid; and in others, cellular and friable. Their form also varies much. Some are spherical, others semi-globose, and others flat: many are branched; and the branches of some are smooth, and of others hairy, furrowed, or striated. With respect to color, they are red, yellow, brown, &c., but their most prevalent color is yellowish-white.

It is principally in hot climates, between the Tropics, that they are in greatest abundance. Few of them have been observed in any of the European seas, except the Mediterranean. Many species are found in a fossil state.

THE PRICKLY MADREPORE.

This Madrepore is in such extraordinary abundance, as occasionally to form immense beds at the bottom of the sea. In height it increases, without limit, until it is arrested by the line of low water; and in width it is boundless. Captain Cook, and other navigators, have spoken of banks of reefs of coral, or Madrepore, so extensive as to have prevented their approach to land, sometimes even for several leagues. Many voyagers have mentioned the dangers to which they have been exposed, during stormy weather, upon these reefs, not only from their liability to be wrecked, by the ships driving against such as rose nearly to the surface of the water, but also from the cables to which their anchors were fixed having been cut in pieces by chafing against them.

There can be no doubt that several kinds of Madrepore concur in the formation of these reefs; but that which, in general, constitutes by far the greatest portion, is the species here mentioned.

OF THE CORAL TRIBE.

ALL the different species of coral are branched, and the branches are not articulated. Their interior is stony and solid. The surface is striated, and covered by a bark-like envelope, which is fleshy and porous; and from which there issue numerous animals, resembling Polypes both in appearance and structure.

THE RED CORAL.

Few persons are unacquainted with this production, at least in a wrought state, as forming necklaces or bracelets, for the ornament of the female figure. It is, perhaps, the most valuable of all the productions of the sea, except pearls; and constitutes a very important article of commerce.

When Coral is taken from the water, or even touched whilst under water, all the polypes suddenly contract.

The fishing for Coral is, at this day, an object of great importance to the inhabitants of Marseilles, Catalonia, and Corsica; the principal parts of the Mediterranean from which coral is obtained, are the coasts of Tunis and Sardinia, and the mouth of the Adriatic.

OF THE SPONGES IN GENERAL.

THE Sponges consist of an entirely ramified mass of capillary tubes, supposed, by many persons, to be the production of a species of worms which are often found straying about the cavities. Others have imagined them vegetables. But that they are possessed of a living principle seems evident, from their alternately contracting and dilating their pores; and shrinking, in some degree, from the touch, when examined in the water. They are capable of absorbing nutriment from the fluid in which they subsist. The species differ much from each other, both in shape and structure. Some are composed of reticulated fibres, or masses, of small spines; some, as the common or Officinal Sponge, are of no regular shape; others are cup-shaped, and others tubular.

THE OFFICINAL, AND DOWNY SPONGE.

The Officinal Sponge is well known, from its utility for various domestic purposes. It is an elastic substance, and in every part is full of holes. It grows into irregular lobes of a woolly consistence, and generally adheres, by a broad base, to the rocks. A variety of small marine animals pierce and gnaw into its irregular winding cavities. These appear on the outside, by large holes, raised higher than the rest. When Sponge is cut perpendicularly, the interior parts are seen to consist of small tubes, which divide into branches as they appear on the surface. These tubes, which are composed of reticulated fibres, extend themselves every way; by this means increasing the surface of the Sponge, and ending at the outside in an infinite number of small holes, which are the proper mouths of the animal. Each of these holes is surrounded by a few erect pointed fibres, that appear as if they were woven in the form of little spines. The tubes, with their ramifications, in the living state of the Sponge, are clothed with a gelatinous substance, properly called the flesh of the animal.

SECTION OF LIVING SPONGE.

Sponge is an object of commerce in the Mediterranean, and in several of the islands in the Grecian Archipelago. Here, on the submarine rocks, it is found, of large size and in great abundance. As it is chiefly found on rocks, at the depth of five or six fathoms, it has been the cause of many of the inhabitants of these islands having become excellent divers. Yet this fatiguing and dangerous employment does

not at all enrich them; for M. Olivier, in his account of Greece, reports that they are in a state of the most lamentable poverty and wretchedness.

When first taken out of the sea, Sponges have a strong fishy smell, which the fishermen get rid of by washing them perfectly clean in fresh water. This is all the preparation which is necessary, previously to their being packed together for sale; but, without it, they would soon become putrid, and perish.

The reproduction of Sponge is more rapid than would, perhaps, be imagined: it is to be found, in perfection, in places from which, only two years before it had been entirely cleared.

OF THE SERTULARIÆ, OR VESICULAR CORALLINES.

THE general appearance of all the species of Vesicular Corallines, is exceedingly delicate and beautiful. They have the form of plants, being fixed by a base to submarine rocks, to shells, sea-weeds, or other solid bodies, and usually branching upward in a peculiarly elegant manner. Their stems are composed of a horny or elastic and semi-transparent substance, which does not effervesce with acids. These stems are tubulous, and beset throughout with numerous cup-shaped denticles, from which there issue little heads, in the form of polypes. In some of the species the polypes are on one side only of the branches; in others, on both sides; and in others they are verticulate. The color varies; but the greatest number of them are either white, or of a transparent brown; and nearly all of them become brownish when dried.

The Vesicular Corallines form a very numerous tribe. They are common on all the coasts of Europe. By the ancient naturalists, they were considered to be vegetable productions; but they are now transferred to their proper place, in the animal kingdom.

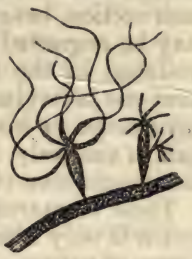
Some of the species are oviparous, and others produce living offspring.

OF THE HYDRA, OR POLYPE TRIBE.

POLYPES are gelatinous animals, which consist of a long tubular body fixed at the base, and surrounded at the mouth by arms or tentacula. They are chiefly inhabitants of fresh water, and are among the most wonderful productions of nature The particulars of their life, their mode of propagation, and powers of reproduction, after being cut to pieces, are truly astonishing. Long after experiments had been made, did scepticism involve the philosophic world; and the history of the animals did not obtain complete credit, till these had not only been often repeated, but had been varied in every possible manner.

THE LONG-ARMED AND GREEN POLYPE.

These are two species which will fully illustrate the nature of the whole tribe. They are found in clear waters, and may generally be seen in small ditches and trenches of fields, especially in the months of April and May. They affix themselves to the under parts of leaves, and to the stalks of such vegetables as happen to grow immersed in the same water; and they feed on the various species of small worms, and other aquatic animals that happen to approach. When any animal of this kind passes near a Polype, the Polype suddenly catches it with its arms, and dragging it to its mouth, swallows it by degrees, much in the same manner as a snake swallows a frog. Two Polypes, may occasionally be seen in the act of seizing the same worm at different ends, and dragging it, in opposite directions, with great force. It sometimes happens, that, while one is swallowing its respective end, the other is also employed in the same manner; and thus they continue swallowing, each his part, until their mouths meet. They then rest for some time in this situation, till the worm breaks between them, and each goes off with his share. But when the mouths of both are thus joined together upon one common prey, a more dangerous combat now and then ensues. The largest Polype gapes and swallows his antagonist; but what is extremely wonderful, the animal thus swallowed seems to be a gainer by the misfortune. After it has lain in the conqueror's body for about an hour, it issues unhurt, and often in possession of the prey that had been the original cause of contention. The remains of the animal on which the Polype feeds are evacuated at the mouth, the only opening in the body. The Polype is capable of swallowing a worm thrice its own size: this, though it may at first appear incredible, is easily understood, when we consider that the body of the Polype is extremely extensile, and is dilated on such occasions to a surprising degree.



POLYPE.

The species are multiplied, for the most part, by a kind of vegetation, one or two, or even more young-ones, emerging gradually from the sides of the parent animal; and these young-ones are frequently again prolific before they drop off: so that it is no uncommon thing to see two or three generations at once on the same Polype.

But the most astonishing particular respecting this animal is that, if a Polype be cut in pieces, it is not destroyed, but is multiplied by dissection; it is thus literally

Rich from its loss, and fruitful from its wound.

It may be cut in every direction that fancy can suggest, and even into very minute divisions, and not only the parent stock will remain uninjured, but every section will become an animal. Even when turned inside-out, it suffers no material injury; for in this state it

will soon begin to take food, and to perform all its other natural functions.

M. Trembley, of Geneva, ascertained that different portions of one Polype could be engrafted on another. Two transverse sections brought into contact will quickly unite, and form one animal, though each section belong to a different species. The head of one species may be engrafted on the body of another. When one Polype is introduced by the tail into another's body, the two heads unite, and form one individual. Pursuing these strange operations, M. Trembly gave scope to his fancy, and, by repeatedly splitting the head and part of the body, he formed hydras more complicated than ever struck the imagination of the most romantic fabulists.

These creatures continue active during the greatest part of the year, and it is only when the cold is most intense that they feel the general torpor of nature. All their faculties are then, for two or three months, suspended. But if they abstain at one time, they make ample amends in their voracity at another; and, like all those animals which becomes torpid in winter, the meal of one day suffices them for several months.

ANIMALCULES.

THE animals of the Linnean order *Infusoria* are extremely simple in their form, and generally invisible without a magnifying power. They are chiefly found in infusions of animal and vegetable substances.

OF THE VORTICELLA TRIBE.

THE Vorticellæ, or Wheel Animals, are the most remarkable of all animalcules, not only in their structure, but also in their habits and production. In general form they bear great affinity to the polypes, having a contractile, naked body, furnished with rotatory organs round the mouth; and indeed many microscopical writers have denominated them *Cluster-polypes*. They are almost invisibly minute, and, during the summer months, are generally found in clear, stagnant waters, attached to the stalks of the lesser water-plants, where they feed on animalcules still smaller than themselves. Many of the species are found in groups, sometimes formed by the mere approximation of several individuals, and at other times by the ramified or aggregate manner in which they grow. Their various motions, like like those of the polypes, are generally exerted only for the purpose of obtaining prey. The rotatory motion of their tentacula causes an

eddy in the water, around each individual, sufficient to attract into its vortex such animalcules as happen to swim near; these the little creature seizes, by suddenly contracting its tentacula and enclosing them in the midst. In several of the species the stems, into which they occasionly withdraw themselves, are somewhat rigid or scaly. The young-ones are carried in oval integuments on the outside of the lower part of the stems; and, when ready to issue forth, the parents aid their extrusion, where such is necessary, by writhing their bodies, or striking the little vesicle. As soon as the young-one is liberated from its prison, it fixes itself, and commences the necessary operations to procure its food.

THE COMMON WHEEL ANIMALCULE AND THE CONVALLARIAN VORTICELLA.

If the water that is found standing in gutters of lead, or the sediment it has left behind, has any appearance of a red or dark brown color, it will almost always be found to contain these animalcules. And, in the summer-time, if a small quantity of this dust be put into water, and placed under the microscope, it seldom fails to yield them in considerable numbers. They are denominated Wheel Animals, from their being furnished with a pair of instruments on the anterior part of their body, which, in figure and motion, somewhat resemble wheels.

These animalcules may be kept for several months out of water, and in a state of perfect dryness, without losing the principle of life. When dry, they are of a globular form, and about the size of a grain of sand. If put into water, after the space of about half an hour a languid motion begins. The globule turns itself about, lengthens by degrees, and soon afterwards becomes very lively. In a short time it protrudes its wheel, and swims about in search of food; or fixing itself by the tail, brings the food to it by its rotatory organs, which throw the whole circumjacent fluid into a violent commotion. After its hunger is satisfied, it generally becomes quiescent; and sometimes resumes even its globular form.

During the time it is in action, it frequently changes its shape and appearance: this, and the sudden transformation of the head, are equally surprising and singular. From being very taper, the head sometimes becomes, almost instantaneously, as broad as any part of the body, and protrudes its curious machinery. The circular bodies projecting from the animal in this state, whirl round with considerable velocity. As they are very transparent, the edges excepted, which are set with numerous fibrillæ, it is difficult to distinguish how the rotatory motions are performed; or whether their figure be flat, concave, or conical. They are, however, projected from tubular cases, into which the animal can withdraw them at pleasure. They sometimes turn the same way, and sometimes different ways at the same time.

All the actions of this creature indicate great sagacity and quickness of sensation.

OF THE VIBRIO TRIBE.

In this numerous tribe, the animals (nearly invisible to the naked eye) are of a simple, round, and elongated form. Several of them are found in vegetable infusions, and some in stagnant water: a few have been discovered in putrid sea-water, one in vinegar, and two in paste and infusions of grain.

THE EELS IN PASTE, AND IN BLIGHTED WHEAT.

From the general round and elongated form of these animalculæ, all the microscopical writers have been led to distinguish them by the appellation of Eels, although even the most gigantic individuals are seldom the tenth of an inch in length.

In order to procure those which are found in paste, the following simple process is recommended: boil some flour in water, adding to it a few drops of vinegar; put this into a coarse cloth, and bury it in an earthen pot, which has a hole in the bottom, and which is partly filled with earth, the pot is then to be exposed to the heat of the sun in summer, or kept in a warm place in the winter, for ten or twelve days, at the end of which time, if examined with a glass, it will be seen to contain a great abundance of these animalcules, which move about in every direction, with wonderful strength and rapidity.

If, from a small quantity of the paste diluted with water, one of the Eels be separated, and removed into a drop of water ready prepared on a separate glass, and there be cut asunder with a lancet or very sharp penknife, the mode in which the young-ones come to life may at any time be observed. Several oval bodies will be seen to issue from the wound. These are the offspring, in different stages of maturity, each coiled up and enclosed in its proper membrane. The largest and most forward of the group break through this delicate integument, unfold themselves, and wriggle nimbly about in the water. Others escape from their confinement, uncoil themselves, and move more slowly; and those which are least mature, continue entirely without motion; more than a hundred have thus been observed to issue from a single individual. This circumstance will readily account for their very sudden and prodigous increase.

It is an extremely singular circumstance, that in the latter part of the year, and during winter, these Eels are oviparous, whilst at other seasons they produce living offspring.

The *Eels of blighted Wheat* are found in those ears, the grains of which appear blackish, as if scorched, and the inside of which contains a soft, white substance. If these grains be soaked in water for a few hours, a great number of the animalculæ will be found, some of them sufficiently large to be visible without the aid of magnifying powers.

They are oviparous; and the eggs, when at full growth, are nearly of a cylindrical shape, with both the ends rounded. These issue from

two little protuberances at the posterior extremity of the body. In the microscope, two generations may often be seen at the same time in the same animal, some of them almost in a state of maturity, and others small.

In blighted grains of wheat, which have been kept dry even for years, these animalculæ have been found after a soaking for ten or twelve hours in water.

THE PROTEAN VIBRIO.

This is a species which has derived its name from its very singular power of assuming different shapes, so as sometimes with difficulty to be distinguished for the same animal. When water, in which any vegetable has been infused, or in which any animal substance is preserved, has stood undisturbed for some days, a slimy substance will be found on the sides of the vessel, some of which, if viewed in a microscope, will be found to contain, among several other animalcules, the Proteus. It is pellucid and gelatinous; and generally swims about, with a long neck and bulbous body, and with great vivacity. Sometimes it stops for a minute or two, and stretches itself out, apparently in search of prey. When alarmed, it immediately draws in its neck, becomes more opake, and moves sluggishly. It will then perhaps, instead of its former long neck, push out a kind of wheel machinery, the motions of which draw a current of water, and, along with this, probably its prey. Withdrawing the wheel, it will, sometimes, for several seconds, remain nearly motionless, as if weary; then, protruding its long neck, it will resume its former agility; or, instead, adopt in succession a multitude of different appearances.

OF THE VOLVOX TRIBE.

NEARLY all the species of Volvox are invisible to the naked eye. They are simple, pellucid, and of spherical shape. One of the kinds is found in pure water, one in vegetable infusions, and others in water which has been kept in glass. The species hitherto ascertained, are only nine in number.

THE GLOBULAR VOLVOX.

During the spring and summer months, these animalculæ are every where to be found in stagnant water; and in winter, they may be produced in water by an infusion of hempseed or hay. Sometimes they are sufficiently large to be visible by the naked eye. They move round, rolling over and over like a bowl, spinning like a top, or gliding along smoothly without turning at all. Sometimes their motions are very slow, and at other times quick and active. Occasionally they may be seen to turn rapidly round, as if upon an axis, without moving out of their places.

Under the microscope, their bodies seem to be covered with numer

ous globulets of different sizes. These appear to contain the young-ones, for, when they are in a proper state of maturity, the exterior membrane bursts open, and the young-ones pass through the fissure: shortly after this the parent animalculæ die and melt away.

The globulets, while in the body of the parent, contain other globulets, and these again others; so that it may, with propriety, be said, that these animalculæ bear children, grand-children, and great grand-children all at the same time.

THE BUBBLE VOLVOX.

I shall conclude this work, with La Martiniere's description of *Volvox Bulla*, a species of animals nearly the most simple of any that have yet come to our knowledge. "They consist (he says) only of oval bodies, similar in shape to soap-bubbles, arranged in parties of three, five, six, and nine; among them are also some solitary ones. These collections of globules, being put into a glass filled with sea-water, described a rapid circle round the glass by a common movement, to which each individual contributed by the simple compression of the sides of its body, probably the effect of the reaction of the air with which they were filled. It is not, however, easy to conceive how these distinct animals (for they may be readily separated without deranging their economy) are capable of concurring in a common motion. These considerations, together with the form of the animal, recalled to my mind, with much satisfaction, the ingenious system of M. de Buffon; and I endeavored to persuade myself, that I was about to witness one of the most wonderful phenomena of nature, supposing that these molecules, which were now employed in increasing or diminishing their number, or performing their revolutions in the glass, would soon assume the form of a new animal, of which they were the living materials. My impatience led me to detach two from the most numerous group, imagining that this number might perhaps be more favorable to the expected metamorphosis. I was however mistaken. These I examined with more attention than the rest, and the following account is of their proceedings alone. Like two strong and active wrestlers, they immediately rushed together, and attacked each other on every side; sometimes one would dive, leaving its adversary at the surface of the water; one would describe a circular movement, while the other remained at rest in the centre: their motions at length became so rapid, as no longer to allow me to distinguish the one from the other. Having quitted them for a short time, on my return I found them re-united as before, and amicably moving round the edge of the glass by their common exertions."

Were ev'ry falt'ring tongue of man,
Almighty Father! silent in Thy praise,
Thy works themselves would raise a general voice;
Even in the depth of solitary woods,
By human foot untrod, proclaim Thy power.

FINIS.

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